GPS AutoSteer System
Installation Manual

Supported Vehicles

Ag-Chem Rogator

864	
1064	
1264	
874	SS874
1074	SS1074
1274	
1274C	

P/N: 602-0192-01-A

LEGAL DISCLAIMER

Note: Read and follow ALL instructions in this manual carefully before installing or operating the AutoSteer system.

Note: Take careful note of the safety information in the Safety Information section and throughout this manual.

The manufacturer disclaims any liability for damage or injury that results from failure to follow the instructions and warnings set forth herein.

Please take special note of the following warnings:

1. There is NO obstacle avoidance system included in the manufacturer's product. Therefore, users must always have an operator on the equipment when the AutoSteer system is in use to look for any obstacles including people, animals, trees, ditches, buildings, etc.
2. During installation of the AutoSteer system and during the Calibration and Tuning processes the vehicle's wheels turn from side to side and the vehicle moves. Be sure that all people and obstacles are clear of the vehicle before installation, calibration and tuning, or use of the AutoSteer system.
3. Use of the AutoSteer system is NOT permitted while the vehicle is on public roads or in public areas. Ensure that the system is OFF before driving on roads or in public areas.

Special Requirements

Tools

This list consists of the tools required to complete the installation. The installer is assumed to have a complete set of common installation tools.

Allen Hex Key 1/4”	11/16” open wrench	16mm open wrench
Allen Hex Key 3/16”	5/8” open wrench	17mm open wrench
Allen Key 5/32”	9/16” open wrench (2x)	18mm open wrench
Allen Hex Key 1/8”	1/2” open wrench	19mm open wrench
15/16” open wrench	7/16” open wrench	22mm open wrench
7/8” open wrench	1/2” 12 point ratcheting wrench	24mm open wrench
13/16” open wrench	15/16” socket wrench	18mm socket wrench
3/4” open wrench	13mm open wrench	22mm socket wrench
Breaker bar for 24mm socket	Hacksaw with steel cutting blade	24mm socket wrench
Torque wrench for 18/24/30mm sockets	Wire cutter small	30mm socket wrench
#1 Phillips screwdriver	Cleaning brush	5000 psi Pressure Gauge with a Short Hose and 1/8” Test Port Coupler that meets the SAE J1502 standard.
#2 Phillips screwdriver	Ten Foot Ladder	Tape measure (12ft minimum)
Cleaning rags	1/4 - 20 Tap	

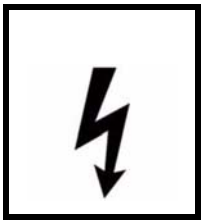
Safety Information

Warning Alerts

The AutoSteer system installer and manufacturer disclaim any responsibility for damage or physical harm caused by failure to adhere to the following safety requirements:

- As the operator of the vehicle, you are responsible for its safe operation.
- The AutoSteer system is *not* designed to replace the vehicle's operator.

Note: Verify that all screws, bolts, nuts, hose connections and cable connections are tight after the final installation of the AutoSteer system on the vehicle.

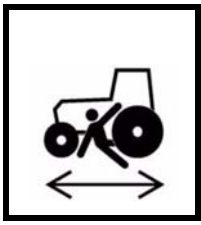


⚠ WARNING

To avoid electrical shock hazards, remove the Roof Module from the vehicle before driving under low structures or low electrical power lines.

⚠ WARNING

To prevent injury from falling, ensure you are in a stable position on the vehicle when installing or removing the Roof Rail and Roof Module. If the vehicle does not provide a safe platform, use a ladder to safely access the vehicle roof while installing or removing the Roof Rail and Roof Module.



⚠ WARNING

To prevent the vehicle from running over a person, you must never leave the vehicle while the vehicle's operator chair with the AutoSteer engaged.

⚠ WARNING

High-Pressure Fluid Hazard

Read this manual before installation. Wear hand and eye protection while performing hydraulic system maintenance. Relieve hydraulic system pressure before servicing the hydraulic system.

⚠ WARNING

To understand the potential hazards associated with the operation of AutoSteer equipment read the provided documentation before installing the AutoSteer system on a vehicle.

⚠ WARNING

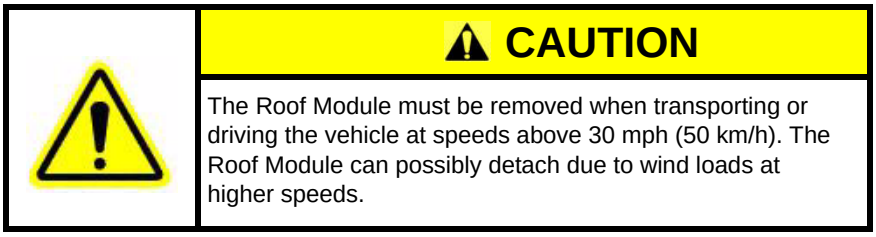
To prevent the accidental engagement of AutoSteer and loss of vehicle control while driving on roads, shut down the AutoSteer system (exit the program). Never drive on roads or in public areas with the AutoSteer system turned on.

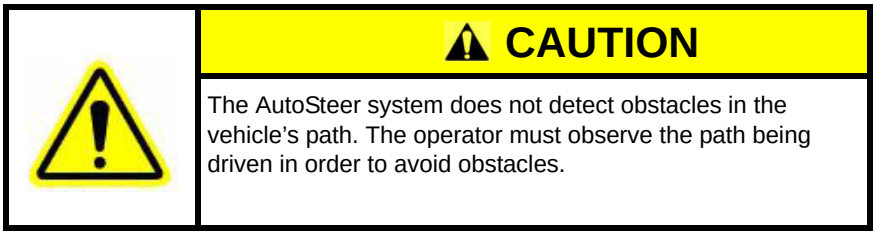
⚠ WARNING

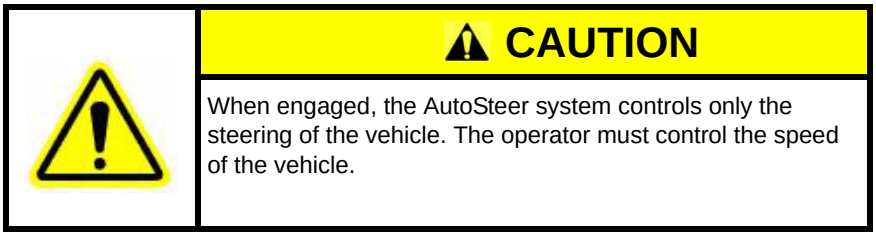
Do not stand close to the wheels and do not move the machine while you are adjusting the Relief Valve. Turn off the engine and engage the parking brake before standing under or next to the machine.

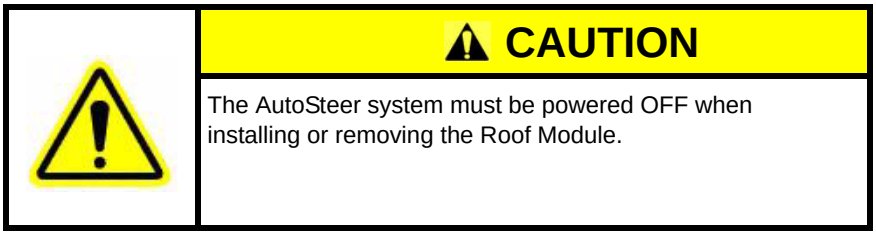
Caution Alerts

The AutoSteer system installer and manufacturer disclaim any responsibility for damage or physical harm caused by failure to adhere to the following safety requirements:









CAUTION

The Roof Module must always be firmly secured to the Roof Rail using the hardware whenever the vehicle is in operation to prevent the Roof Module from releasing from its bracket and falling.

Vehicle Requirements

The vehicle steering and hydraulic systems must be in good working order before installing the AutoSteer system. Check for loose or worn parts. Before installing the AutoSteer system drive the vehicle and confirm that it steers straight and the wheels can be turned from lock to lock. Check the steering system hydraulic hoses and connections to ensure there are no oil leaks.

The vehicle electrical system and battery must be in good working order.

The vehicle should be fully cleaned before installing the AutoSteer system. A clean vehicle will improve the overall installation and cable routing and will also reduce the chance for oil contamination when the hydraulic connections are opened. It is important to clean the area around the steering cylinders, frame, hydraulic pump, and cab.

Important Information

Note: Verify that all screws, bolts, nuts, hose connections and cable connections are tight after the final installation of the AutoSteer system on the vehicle.

Technical Support

Refer to your Display user manual for technical support information.

Contact Information

Refer to your Display user manual for contact information.

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Installation Overview

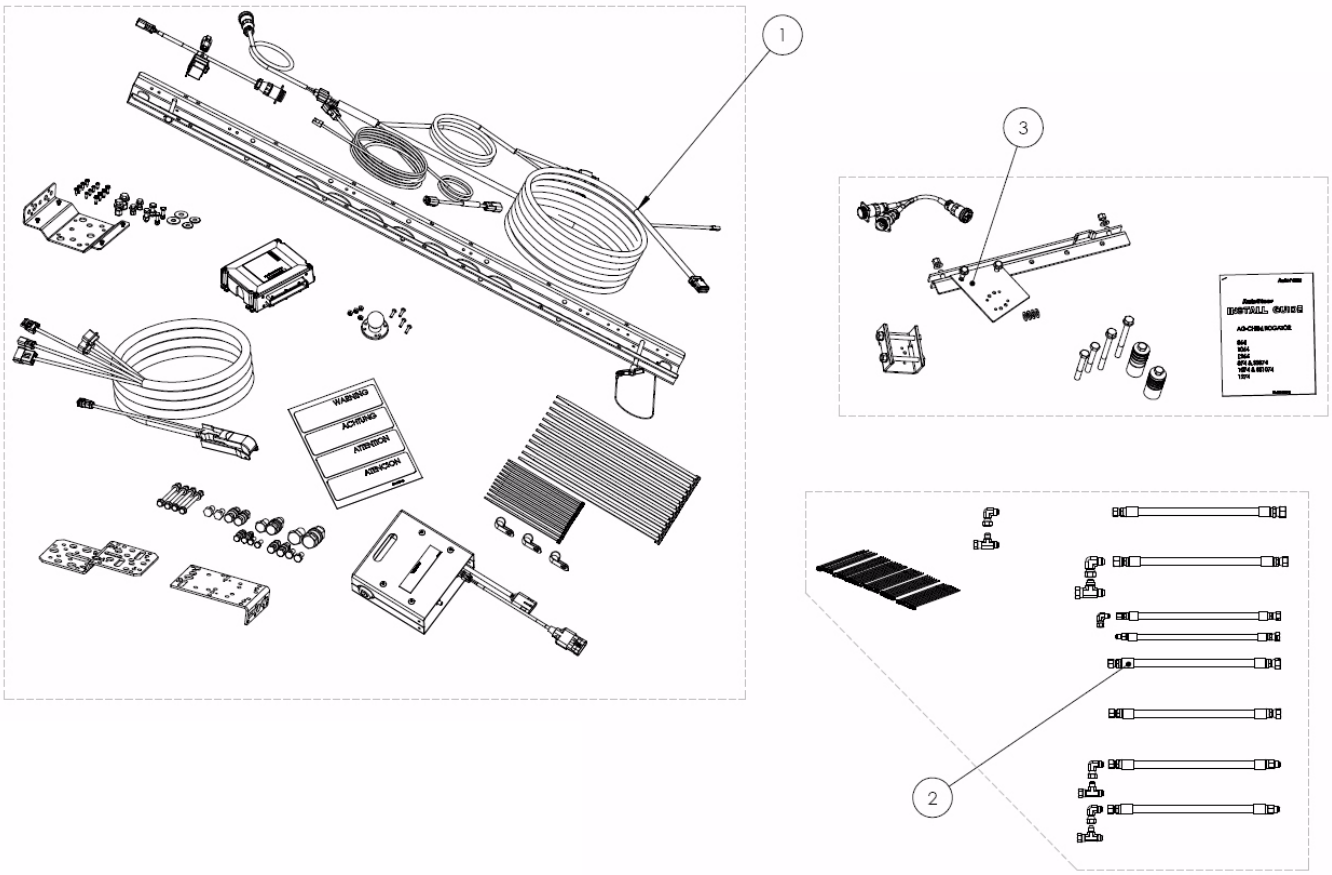
This **Installation Overview** chapter contains information in the following sections:

- *Kit Overview*
  - *Assemblies*
    - *Steering Valve Kit Components*
    - *Hose Kit Components*
    - *Bracket Kit Components*
- *Installation Procedure Outline*
- *Cable Diagram*

Kit Overview

The Ag-Chem Rogator 64/74 sprayers AutoSteer kit (P/N: 188-0004-01) contains the components shown in *Figure 1-1*.

Figure 1-1 Ag-Chem Kit Components (P/N: 188-0004-01)



Note: Component size is not shown to scale.

Table 1-1 Ag-Chem Kit Components (PN: 188-0004-01)

Item	Component	Part Number
1.	Steering Valve Kit	153-0001-01
2.	Hydraulic Hose Kit	500-0305-01
3.	Display Bracket Kit	152-0004-01

Assemblies

The Ag-Chem vehicle installation kit contains the following components:

- *Steering Valve Kit Components*
- *Hose Kit Components*
- *Bracket Kit Components*

Steering Valve Kit Components

Figure 1-2 Kit Components (PN: 153-0001-01)

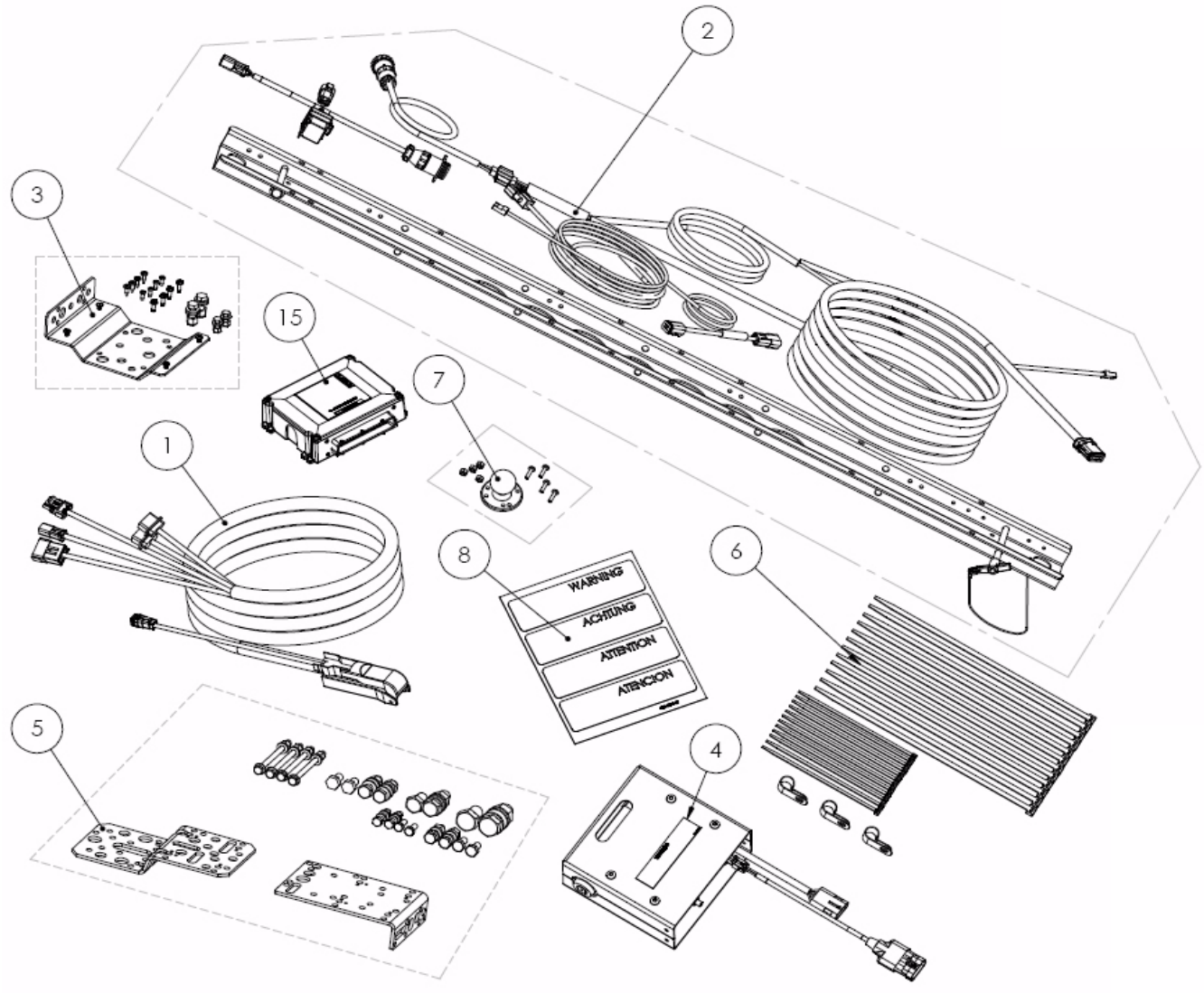


Table 1-2 Installation Kit Sub-Assembly Components (PN: 153-0001-01))

Item	Component	Part Number
1.	SA Module Harness	201-0371-02
2.	Common Installation Kit	200-0497-02
3.	SA Module Bracket	200-0190-01
4.	Steering Valve Assembly	200-0457-01
5.	Steering Valve Bracket Kit	200-0434-01
6.	Mounting Hardware	200-0076-01
7.	Display Mounting Base Assembly	200-0508-01
8.	Warning Labels	603-0074-01
15.	SA Module Assembly	200-0206-01

Hose Kit Components

Figure 1-3 Ag-Chem Rogator 64/74 Hose Kit (PN: 500-0305-01)

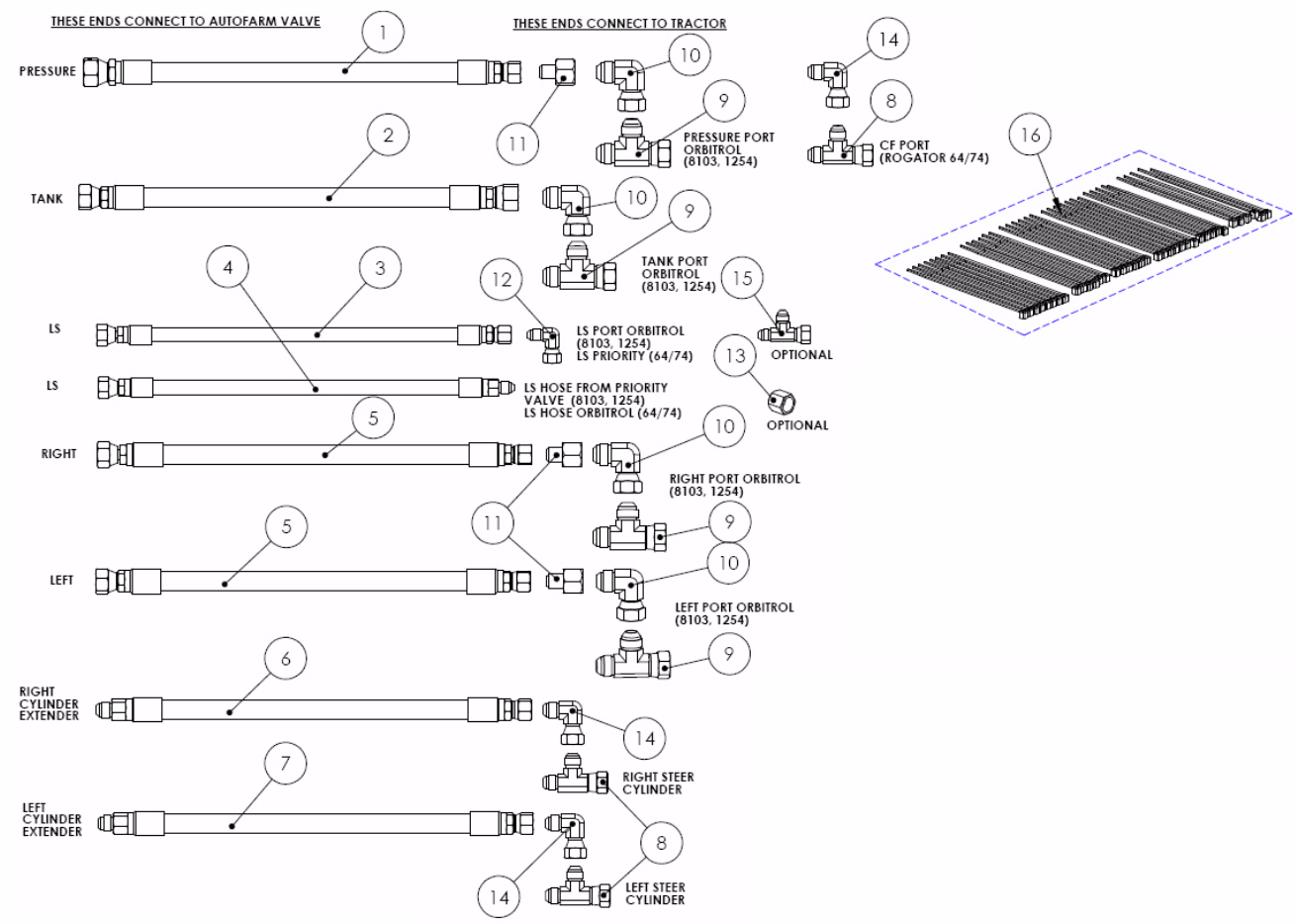


Table 1-3 Ag-Chem Rogator 64/74 Hose Kit Components (PN: 500-0305-01)

Item	Component	Part Number
1.	Hose Assembly 3/8” x 84”	F451TC-JC06080606-84
2.	Hose Assembly 3/8” x 84”	F451TC-JC06060806-84
3.	Hose Assembly 1/4” x 84”	F451TC-JC06040404-84
4.	Hose Assembly 1/4” x 78”	F451TC-JC03040404-78
5.	Hose Assembly 3/8” x 84”	F451TC-JC06060606-84
6.	Hose Assembly 3/8” x 132”	F451TC-0306060606-132
7.	Hose Assembly 3/8” x 168”	F451TC-0306060606-168

Item	Component	Part Number
8.	Run Tee -6 JIC	6 R6X-S
9.	Adapter Run Tee -8 JIC	8 R6X
10.	Swivel Nut Elbow -8 JIC	8 C6X-S
11.	Adapter Reducer -8F x -6M JIC	8-6 TRTXN-S
12.	Adapter Elbow -4 JIC 37 degrees	4 C6X-S
13.	Cap -4 ORFS	4 FNL
14.	Adapter Swivel Nut Elbow -6 JIC	6 C6X-S
15.	Adapter Run Tee -4 JIC	4 R6X-S
16.	Cable Ties[a]	200-0467-01

a. The colored cable ties included in the kit are used to identify the hydraulic hoses. Place identical colored cable ties at the ends of each hydraulic hose to positively identify the hose.

Note: The suggested hose color assignments are as follows:
Pressure - Red
Tank - Green
LS Orbitrol - Blue
LS Out - Gray
Steer Right - Yellow
Steer Left - Orange

Bracket Kit Components

Figure 1-4 Bracket Kit Components (PN: 152-0004-01)

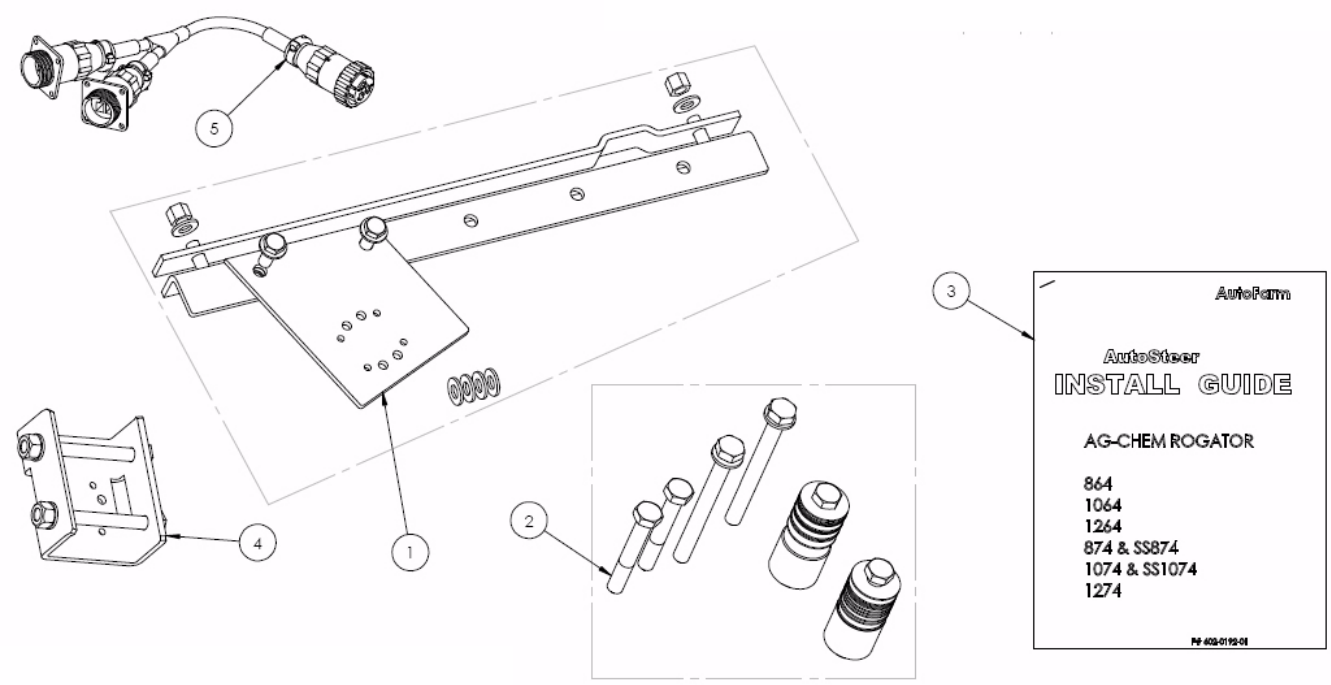


Table 1-4 Bracket Kit Components (PN: 152-0004-01)

Item	Component	Part Number
1.	Display Bracket (John Deere)	200-0137-03
2.	Roof Bolts (Ag-Chem)	200-0439-01
3.	Installation Guide	602-0192-01
4.	Display Bracket (Ag-Chem)	200-0440-03
5.	Power Splitter Cable	201-0024-01

Installation Procedure Outline

Note: The system interconnect cable diagram in the *Cable Diagram* on page 9 of this chapter shows the AutoSteer electrical connections.

1. Verify shipped components.

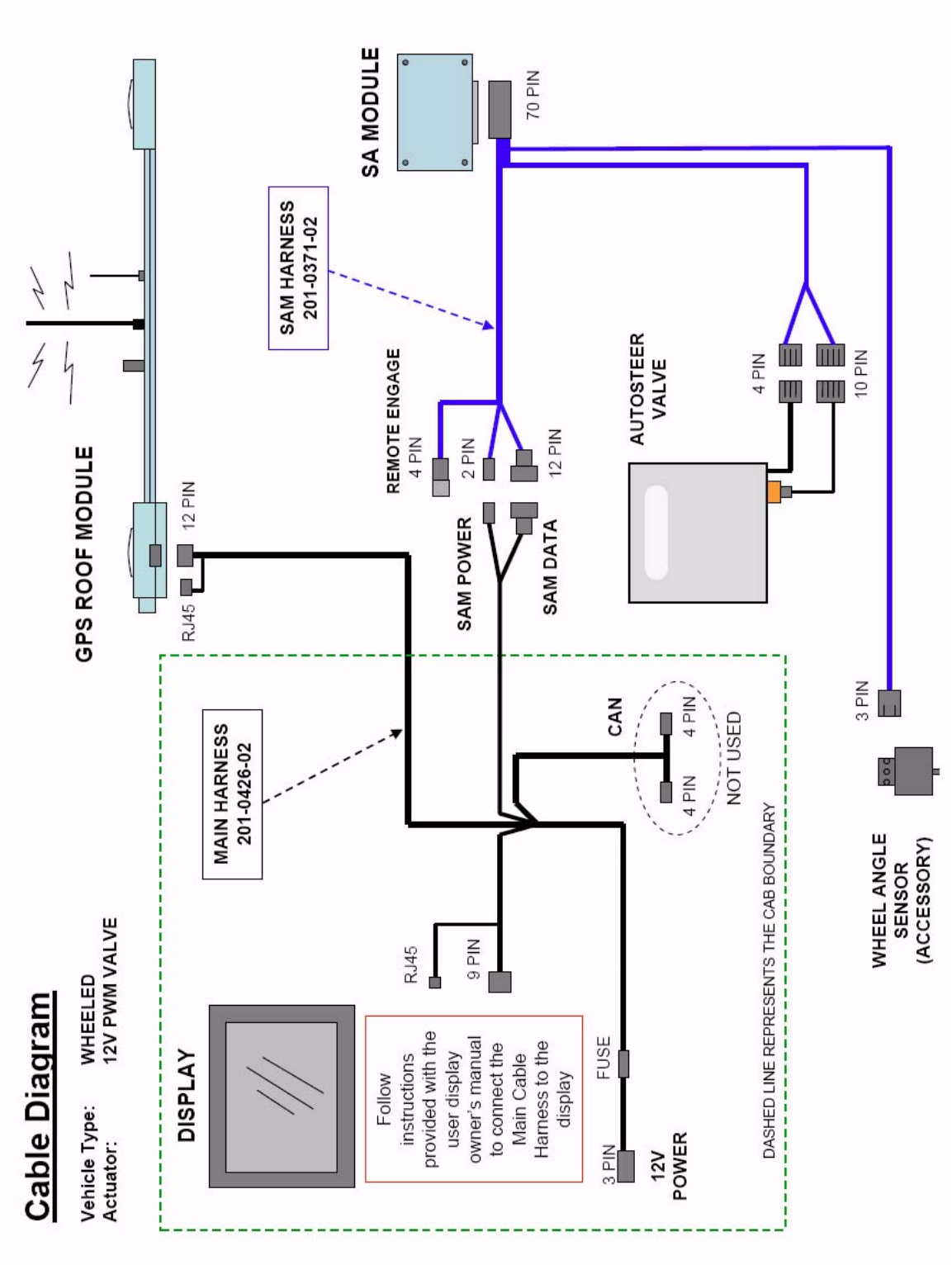
Note: *Step 2*, *Step 3*, *Step 4*, *Step 5*, *Step 8*, *Step 9*, and *Step 14* are skipped if installing an electric steering actuator.

2. Install the Hydraulic Steering Valve Assembly.
3. Install the Hydraulic Hoses.
4. Install the Wheel Angle Sensor. (Optional)
5. Install the SA Module.
6. Install the Roof Rail on the cab roof.
7. Install the Roof Module on the Roof Rail.
8. Install the SA Module Harness and route cables to the various sensors.
9. Route SA Module Harness towards the cab.
10. Install the Display Bracket and the RAM Mount Ball inside the cab.
11. Install the Display using a RAM Mount Arm.
12. Install the Main Cable Harness and route cables to Roof Module and power connector.

Note: Instructions for connecting the vehicle kit cables to the Display can be found in the Display user manual.

13. Connect the Main Cable Harness to the Display Harness.
14. Connect the Main Cable Harness to the SA Module Harness.
15. Verify all connectors are properly coupled and secured.
16. Power ON the AutoSteer system.
17. Calibrate the vehicle.
18. Tune the vehicle.
19. Verify the system has been installed properly and operates satisfactorily.

Cable Diagram



Steering Valve Installation

This **Steering Valve Installation** chapter information is provided in the following sections:

- *Steering Valve Installation Procedure Overview*
- *Hose Kit*
- *Steering Valve Configuration*
  - *Steering Valve Configuration*
- *Install the Steering Valve Bracket*
- *Identifying the Priority Valve Ports*
- *Hydraulic Hose Connection Procedures*
  - *Tank Hose Connection*
  - *Pressure Hose Connection*
  - *Steering Valve Right Steering Hose Connection*
  - *Steering Valve Left Steering Hose Connection*
  - *Load Sense Out Hose Connection*
  - *Orbitrol Load Sense Hose Connection*
- *Pressure Transducer Installation*
- *Adjusting the Relief Valve*
- *Steering Valve Installation Checklist*

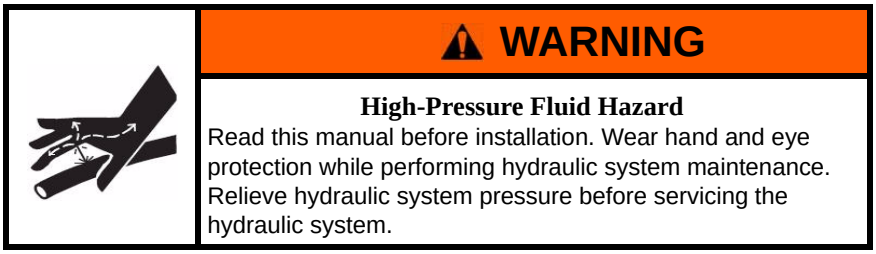
Steering Valve Installation Procedure Overview

Note: You can use a fiberglass cable puller to make it easier to pull the hydraulic hoses and electrical cables through and around the vehicle.

1. Ensure the Steering Valve plug and orifice configuration is correct before installation.

   Note: See the *Steering Valve Configuration* section for Steering Valve plug and orifice configuration information.

2. Install the Steering Valve bracket and Steering Valve on the vehicle.
3. Connect the six hoses between the Steering Valve and the vehicle.
4. Check for oil leaks.
5. Adjust the Pressure Relief Valve.
6. Perform a functional test to confirm correct Steering Valve operation.



Hose Kit

Figure 2-1 Ag-Chem Rogator 64/74 Hose Kit (PN: 500-0305-01)

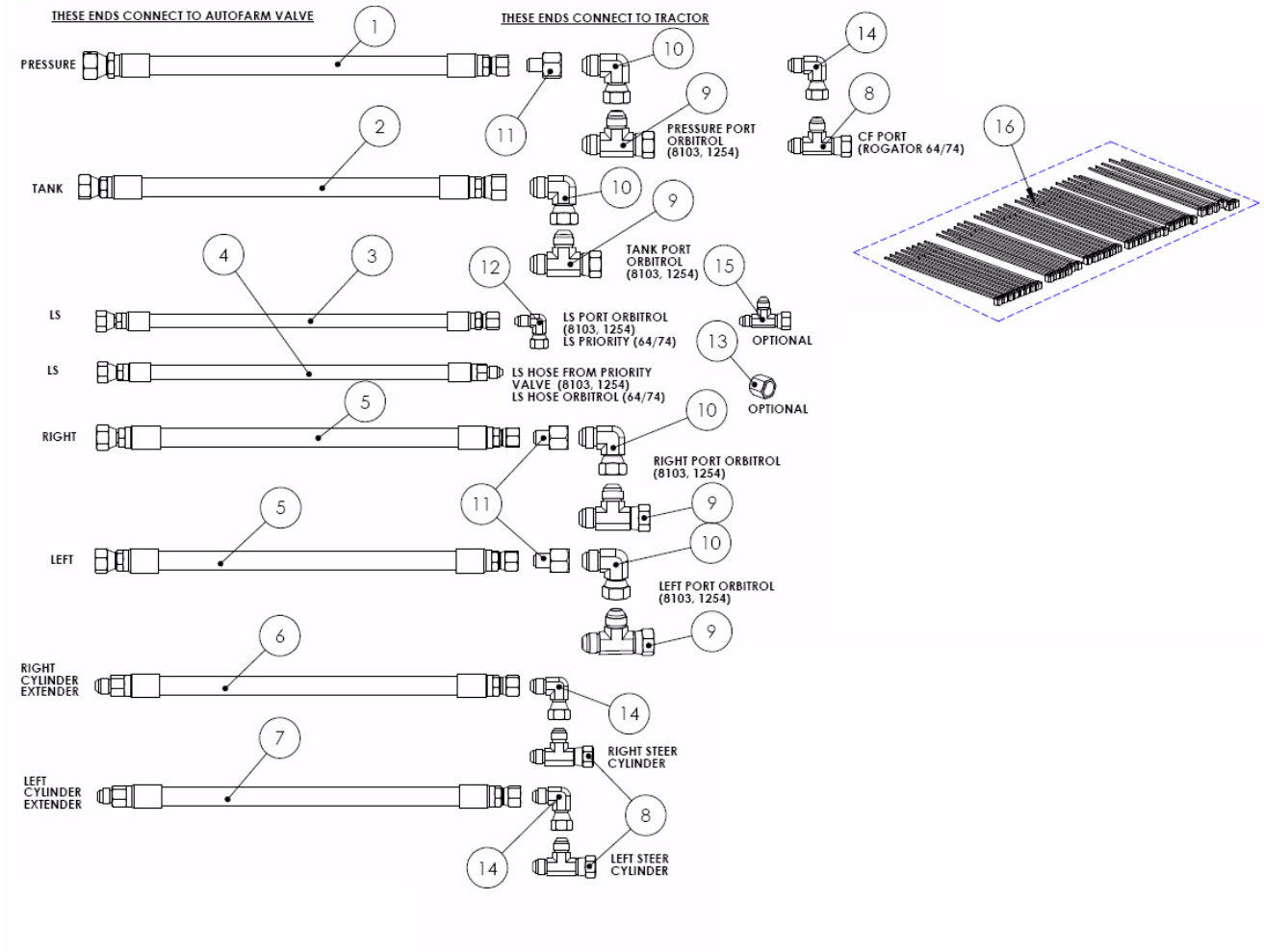


Table 2-1 Ag-Chem Rogator 64/74 Hose Kit Components (PN: 500-0305-01)

Item	Component	Part Number
1.	Hose Assembly 3/8” x 84”	F451TC-JC06080606-84
2.	Hose Assembly 3/8” x 84”	F451TC-JC06060806-84
3.	Hose Assembly 1/4” x 84”	F451TC-JC06040404-84
4.	Hose Assembly 1/4” x 78”	F451TC-JC03040404-78
5.	Hose Assembly 3/8” x 84”	F451TC-JC06060606-84
6.	Hose Assembly 3/8” x 132”	F451TC-0306060606-132
7.	Hose Assembly 3/8” x 168”	F451TC-0306060606-168

Item	Component	Part Number
8.	Run Tee -6 JIC	6 R6X-S
9.	Adapter Run Tee -8 JIC	8 R6X
10.	Swivel Nut Elbow -8 JIC	8 C6X-S
11.	Adapter Reducer -8F x -6M JIC	8-6 TRTXN-S
12.	Adapter Elbow -4 JIC 37 degrees	4 C6X-S
13.	Cap -4 ORFS	4 FNL
14.	Adapter Swivel Nut Elbow -6 JIC	6 C6X-S
15.	Adapter Run Tee -4 JIC	4 R6X-S
16.	Cable Ties[a]	200-0467-01

a. The colored cable ties included in the kit are used to identify the hydraulic hoses. Place identical colored cable ties at the ends of each hydraulic hose to positively identify the hose.

The suggested hose color assignments are as follows:
Pressure - Red
Tank - Green
LS Orbitrol - Blue
LS Out - Gray
Steer Right - Yellow
Steer Left - Orange

Steering Valve Configuration

1. Use a 3/16” Allen key to remove the four cover screws. See *Figure 2-2*.
2. Remove the front cover to access the hose connections, Pressure Transducer, and Relief Valve. See *Figure 2-2*.

Note: *Figure 2-3* identifies the function of the Steering Valve assembly hydraulic connections.

Figure 2-2 Steering Valve Assembly

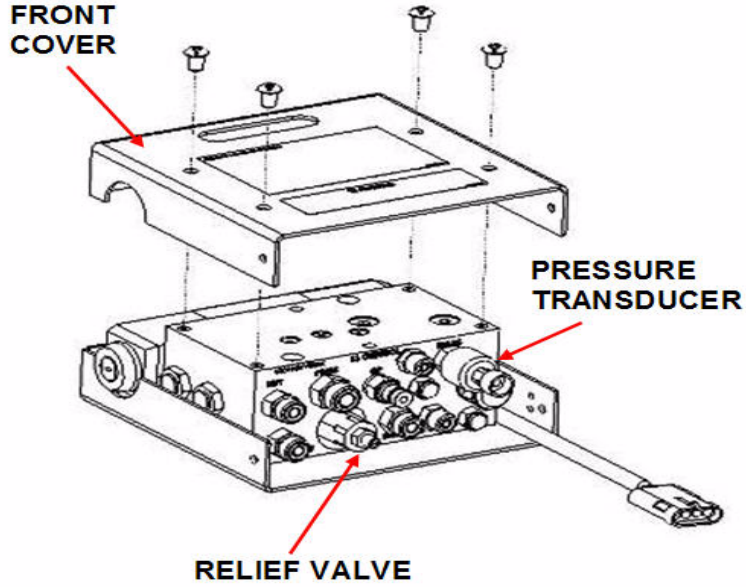
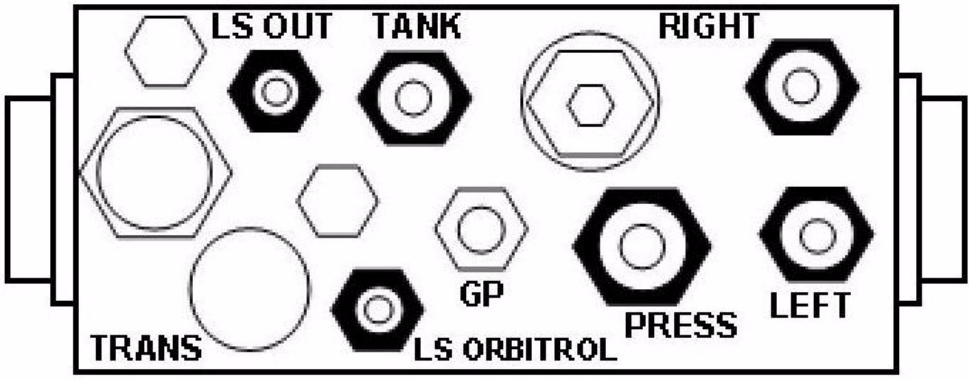


Figure 2-3 Steering Valve Port Identification



Note: The ports shown in *Figure 2-3* are upside-down relative to the ports shown in *Figure 2-2*.

Table 2-2 Steering Valve Functions and Fitting Sizes

Hose Adapter	Fitting Type/Size
PRESS = PUMP PRESSURE	-8 ORFS
TANK = TANK / RETURN	-6 ORFS
LS ORBITROL = LS FROM ORBITROL	-4 ORFS
LS OUT = LS (to Priority Valve)	-4 ORFS
LEFT = LEFT STEERING CYLINDER	-6 ORFS
RIGHT = RIGHT STEERING CYLINDER	-6 ORFS
GP = DIAGNOSTICS PORT	1/8” (SAE J1502)
TRANS = PRESSURE TRANSDUCER	SAE - 4 ORB.

Steering Valve Configuration

The Steering Valve does not require any special configurations or plug and orifice changes before installing on the Rogator 64/74 series when connected directly to the steering circuit as described in this manual. The Steering Valve can be installed and connected to the Orbitrol hoses with the factory default plug and orifice settings. *Table 2-3* shows the correct internal plug configurations in positions **13A**, **13B**, **13C**. The plug position identification are stamped on the valve block.

Note: Other types of valve installations on this vehicle may require special configurations of the internal plugs and orifices. Contact customer service before attempting other types of hydraulic installations that are not covered in this manual.

Note: Do not install this Steering Valve on other vehicles without the appropriate installation manual. Incorrect Steering Valve configuration and the wrong hose connections on other types of steering systems can cause immediate severe pump damage.

1. Remove the front valve cover using a 3/16” hex key to loosen the four screws.
2. Identify the three threaded plugs. See *Figure 2-4*.

Figure 2-4 Steering Valve With Cover Removed

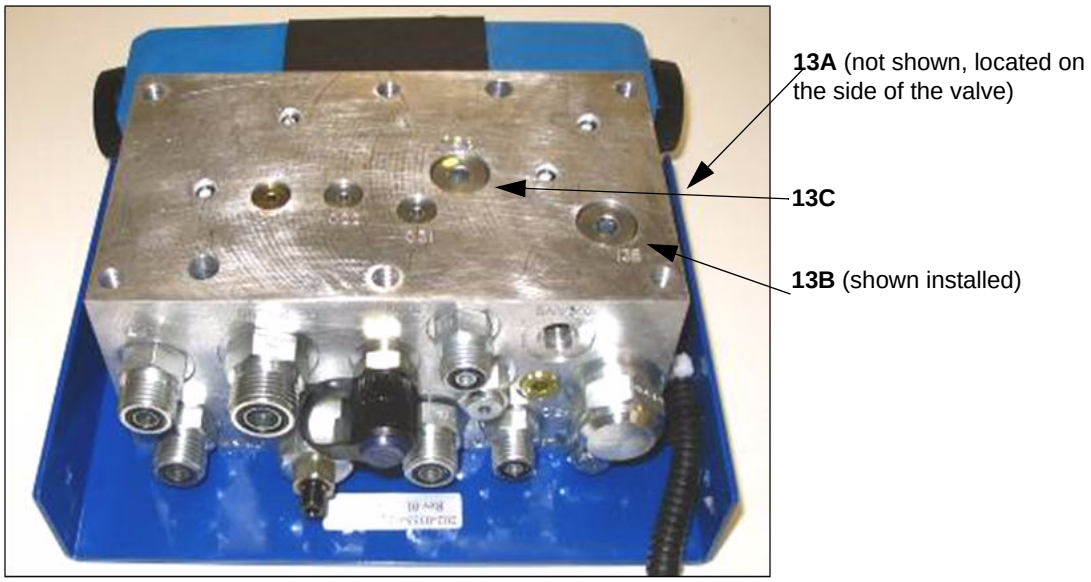


Table 2-3 Plug and Orifice Configuration Summary

Type of Installation	13A	13B	13C
Factory Default Configuration	Plug	Open	Plug
Orbitrol Hookup Installation	Plug	Open	Plug

3. Find the large external access plug identified in position **13B**.
4. Remove the external plug in position **13B** using a 1/4” hex key. See *Figure 2-5*.

Figure 2-5 Removing External Plug

5. Confirm there is not an internal plug installed in position **13B**.
6. If present, remove the internal plug from **13B** position using a 1/8” hex key.
7. Re-install the large external plug in position **13B**.
8. The Steering Valve is now ready to be installed on the sprayer.

Install the Steering Valve Bracket

1. Locate the two holes to be used in securing the Steering Valve bracket. See *Figure 2-6*.

Note: The exact mounting position may vary depending on the sprayer model and existing accessories.The Steering Valve is supplied with two universal valve brackets that fit most machines. The Steering Valve bracket shown in *Figure 2-6* already has the Steering Valve attached.

Figure 2-6 Bracket Bolts

2. Secure the Steering Valve bracket to the sprayer frame using two bolts on existing holes.

Note: The bracket and bolts are provided in the installation kit.

3. Secure the Steering Valve onto the Steering Valve bracket as shown in *Figure 2-7* using four 5/16” hex screws.
4. Tighten the four screws using a 1/2” ratchet wrench.

Figure 2-7 Mounting Steering Valve to Steering Valve Bracket

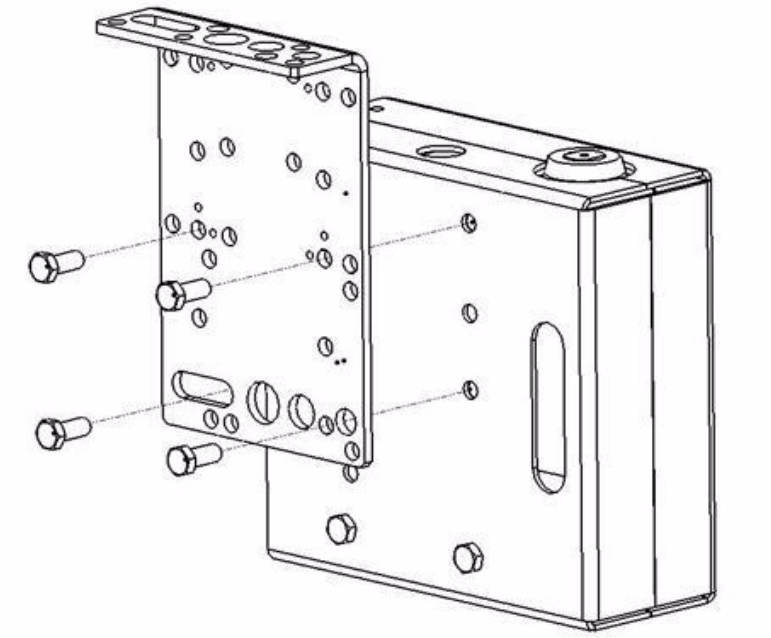


Figure 2-8 shows the Steering Valve mounted on the bracket.

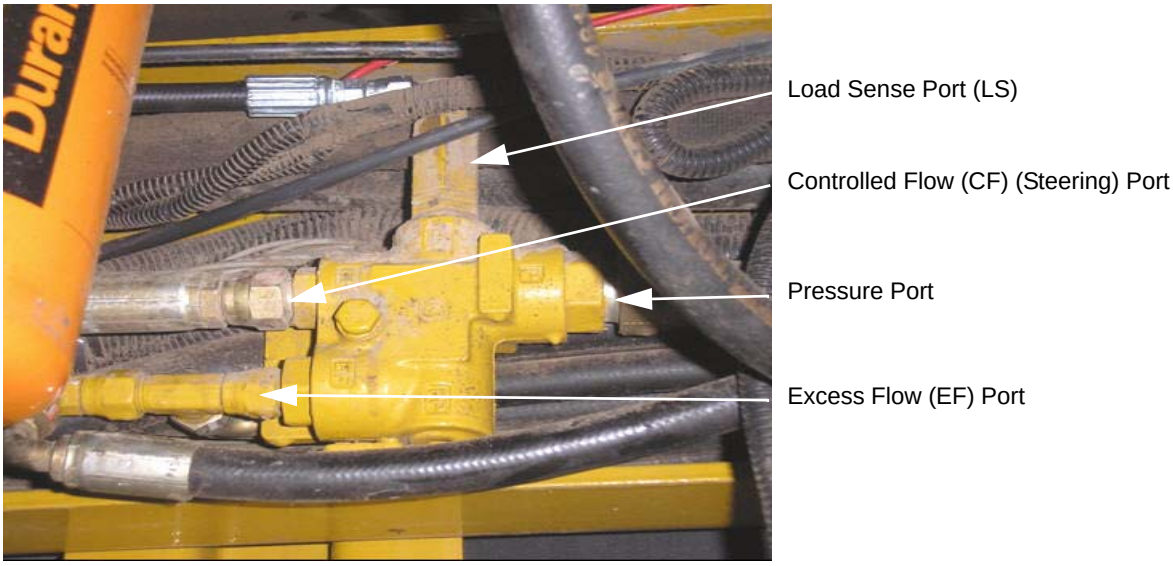
Figure 2-8 Steering Valve Mounted on Bracket (hydraulic hose connected)

Identifying the Priority Valve Ports

The Pressure and Load Sense hoses are connected to the sprayer at the Priority Valve. The Priority Valve is located along the inside of the right side frame. You must identify the Priority Valve ports before connecting the hydraulic hoses. Refer to *Figure 2-9* for Priority Valve port identification. The port ID is also cast on the Priority Valve body.

Note: On some sprayer models the Priority Valve is located on the transmission housing left side. This location may require different hose routing and a different Steering Valve mounting position.

Figure 2-9 Priority Valve Port Identification



Hydraulic Hose Connection Procedures

Figure 2-10 and *Figure 2-11* show the hydraulic connections before and after installation. You can refer to these diagrams as you are connecting the hydraulic components. The hydraulic hose connection procedures are contained in the following sub-sections:

- *Tank Hose Connection*
- *Pressure Hose Connection*
- *Steering Valve Right Steering Hose Connection*
- *Steering Valve Left Steering Hose Connection*
- *Load Sense Out Hose Connection*
- *Orbitrol Load Sense Hose Connection*

Figure 2-10 Hydraulic Hose Connection Diagram (Before AutoSteer Installation)

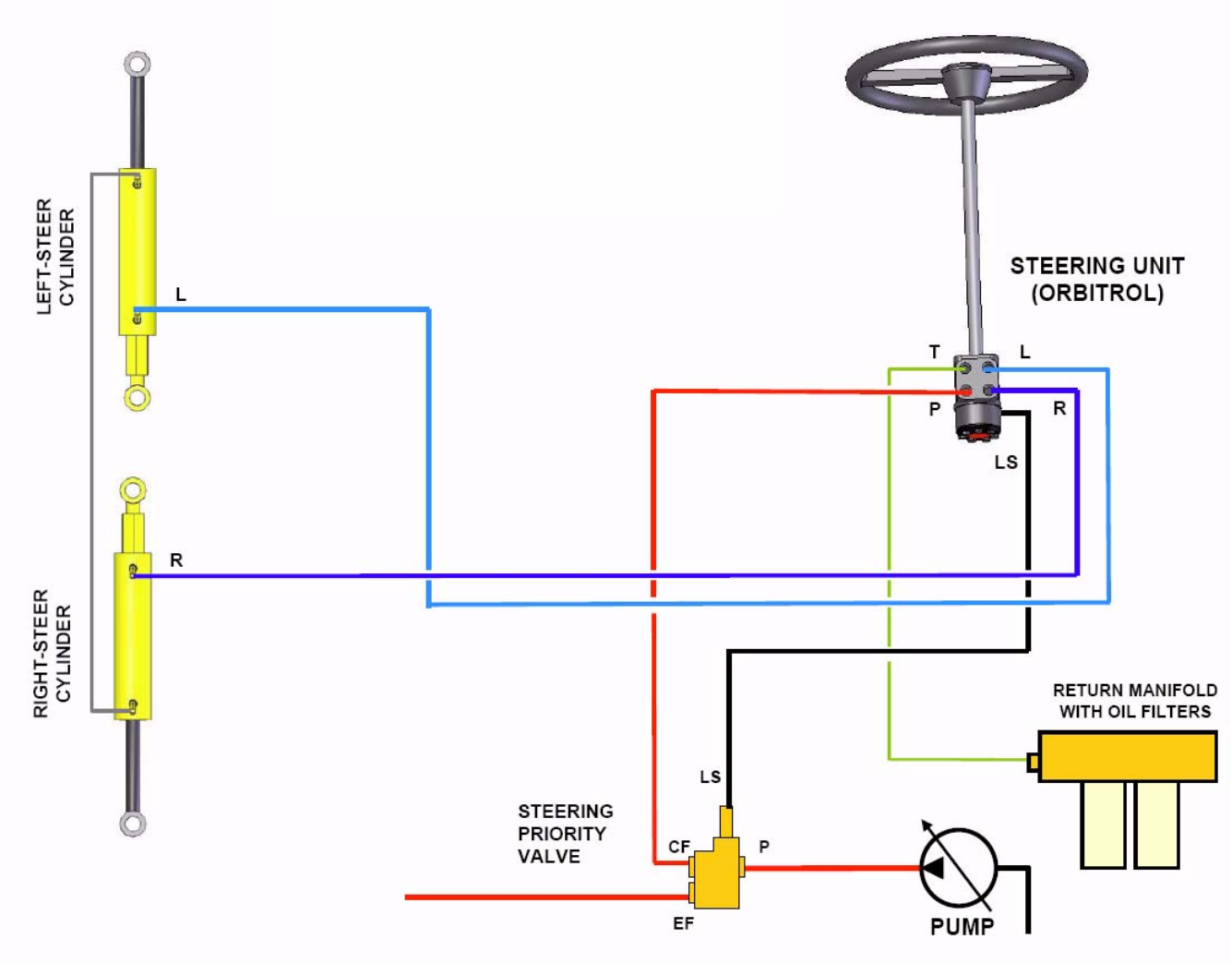
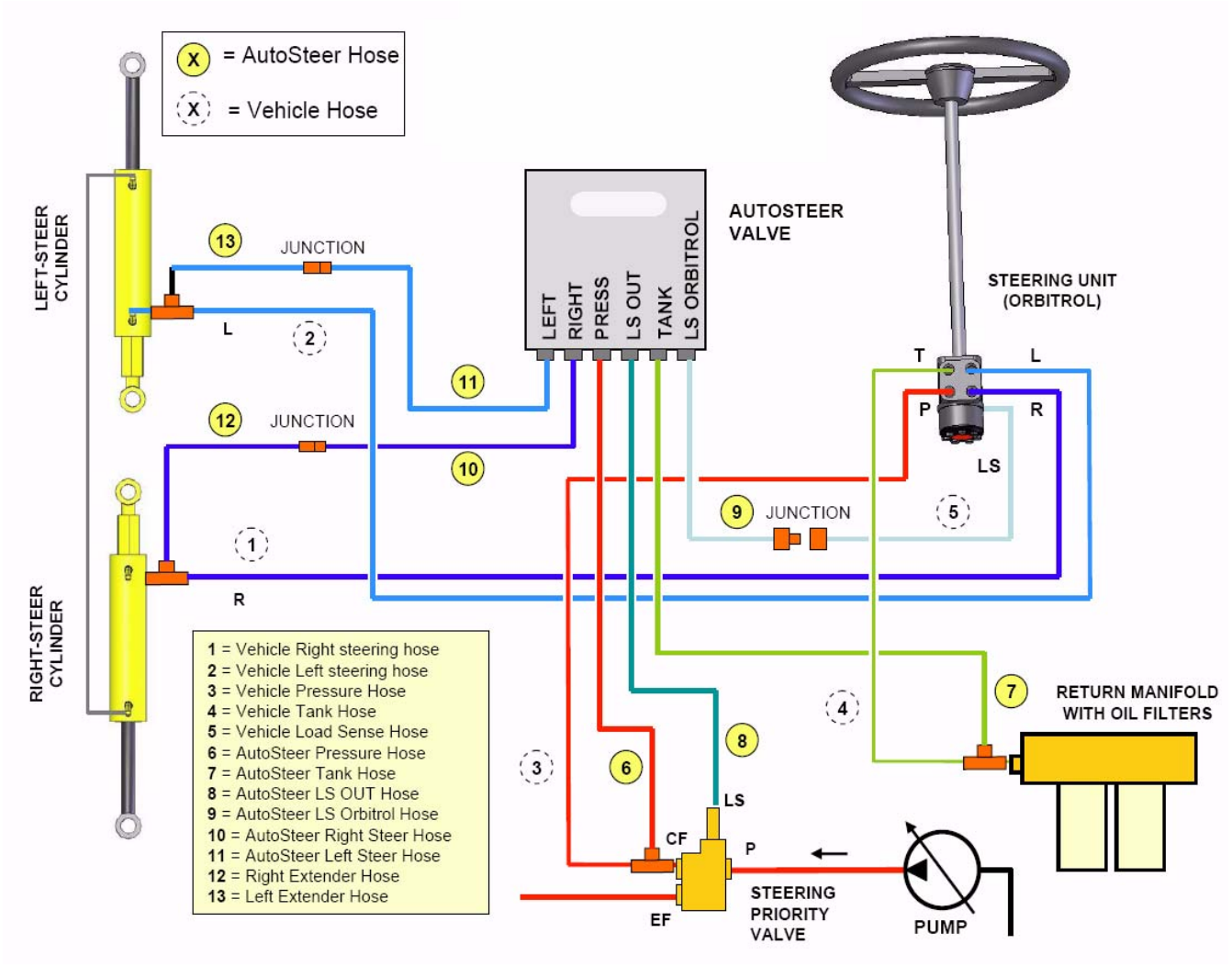


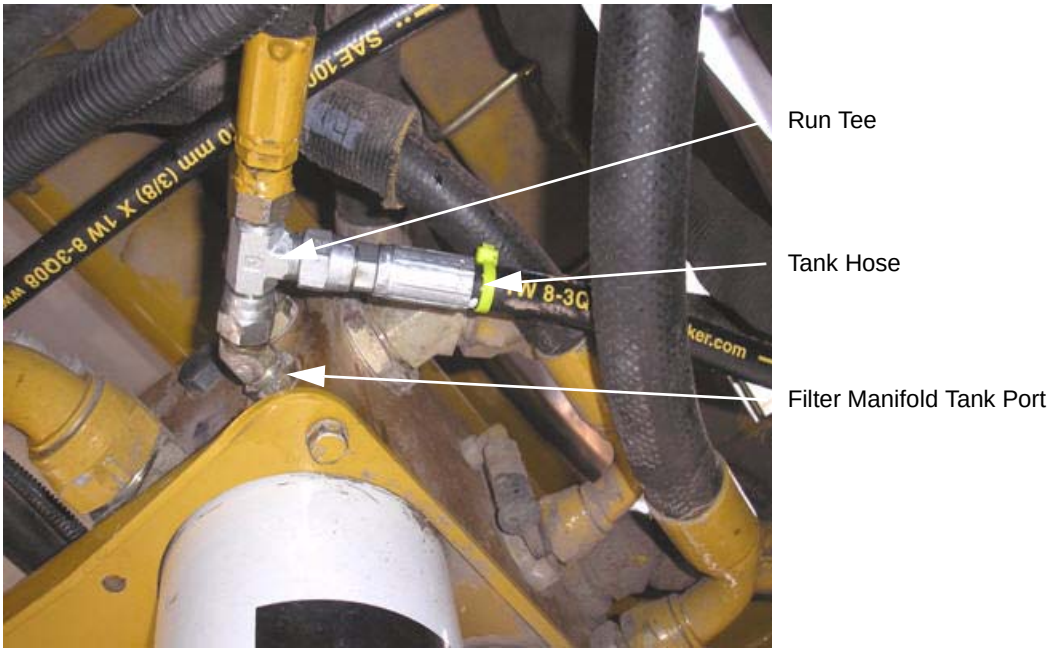
Figure 2-11 Hydraulic Hose Connection Diagram (After AutoSteer Installation)



Tank Hose Connection

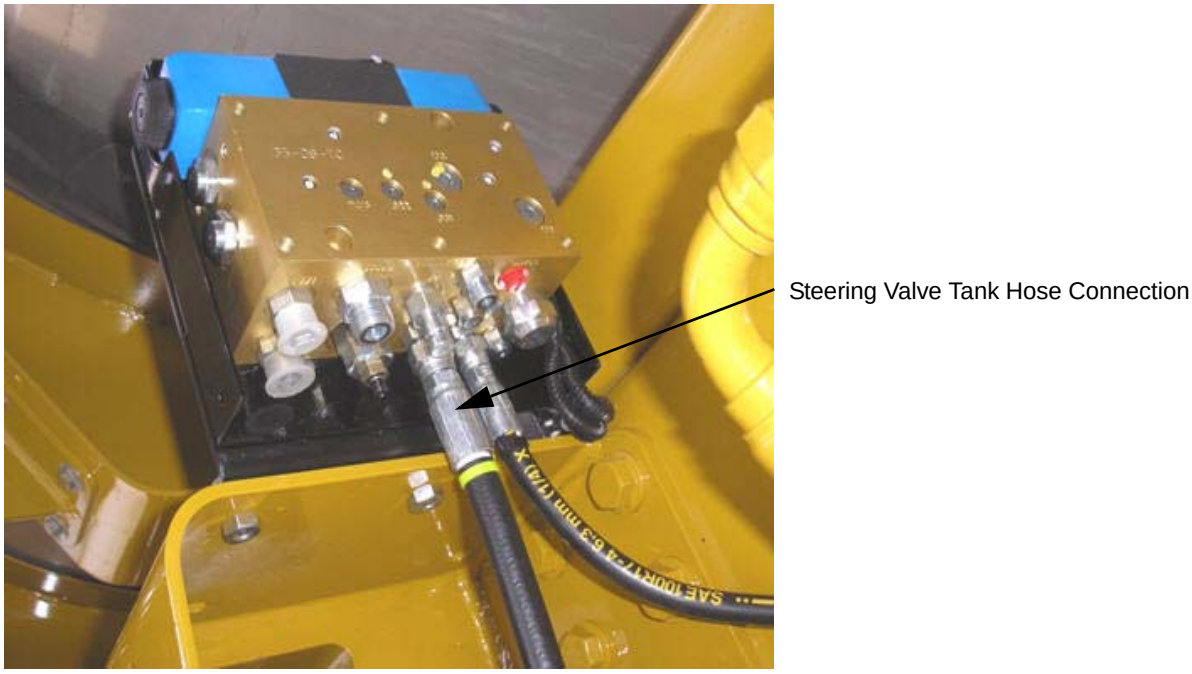
1. Remove the Tank hose (Hose 4 in *Figure 2-11*) from the Tank port on the filter manifold under the sprayer.
2. Install a -8 JIC Run Tee on the Tank port on the filter manifold. See *Figure 2-12*.
3. Connect the original Tank hose to the Run Tee. See *Figure 2-12*.
4. Connect the Tank hose (Hose 7 in *Figure 2-11*) from the TANK port on the Steering Valve to the Run Tee just installed on the Tank port.

Figure 2-12 Filter Manifold Tank Port Run Tee and Hose Connected



5. Connect the Tank hose (Hose 7 in *Figure 2-11*) to the TANK port on the Steering Valve. See *Figure 2-13*.

Figure 2-13 Steering Valve Tank Hose Connected



6. Check every hose individually and confirm that both ends are connected to the correct ports.
7. Refer to the hose diagram in *Figure 2-11* to ensure proper connection.

Note: The wrong hose connections on the Tank port will prevent correct Relief Valve operation and may also damage the Steering Valve.

---

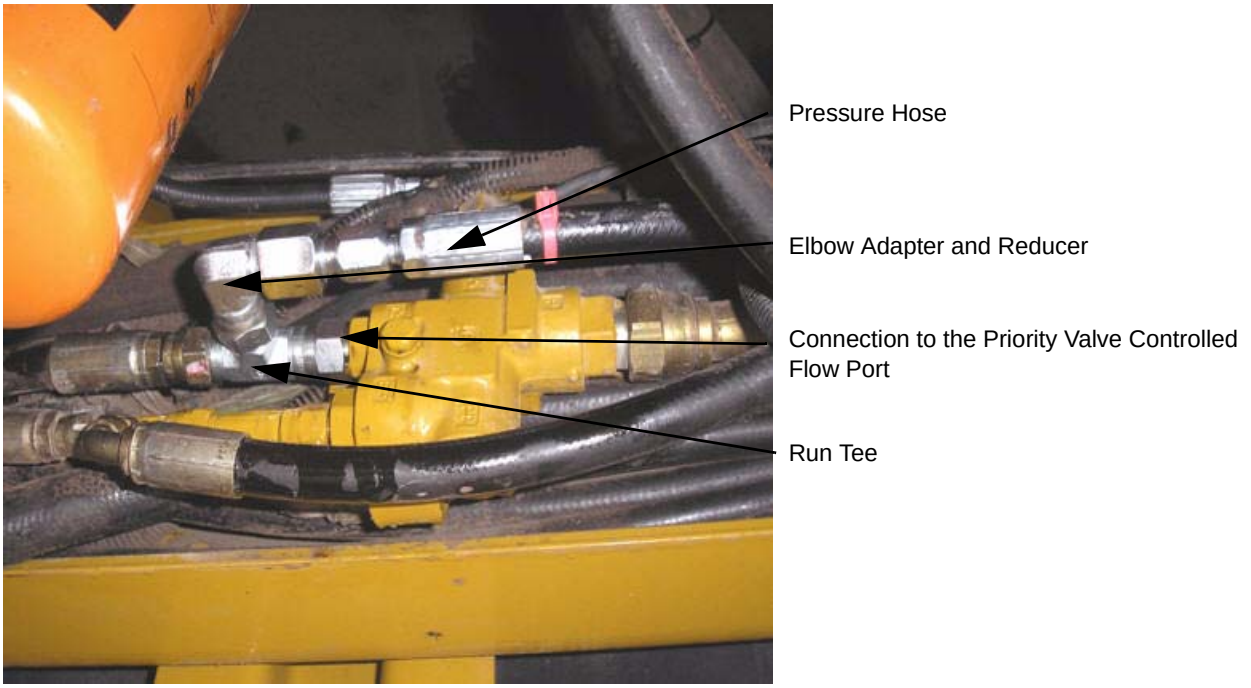
8. Tighten all hose fittings and adapters.
9. Check and secure all hoses using nylon cable ties.

Note: To avoid hose damage, hoses must not drop below the sprayer frame and must not contact moving parts or hot parts such as exhaust manifolds.

Pressure Hose Connection

1. Identify the CF port (Hose 3 in *Figure 2-11*) on the Priority Valve.
2. Remove the Steering Pressure Hose (Hose 3 in *Figure 2-11*) from the Priority Valve CF port.
3. Install a -8 JIC Run Tee on the CF port. See *Figure 2-14*.
4. Connect the original Pressure hose back on the Run Tee. See *Figure 2-14*.
5. Install an elbow adapter and JIC reducer on the side of the Run Tee. See *Figure 2-14*.

Figure 2-14 Priority Valve CF Port Pressure Hose Connection



6. Connect the Pressure hose (Hose 6 in *Figure 2-11*) to the JIC reducer on the Run Tee.

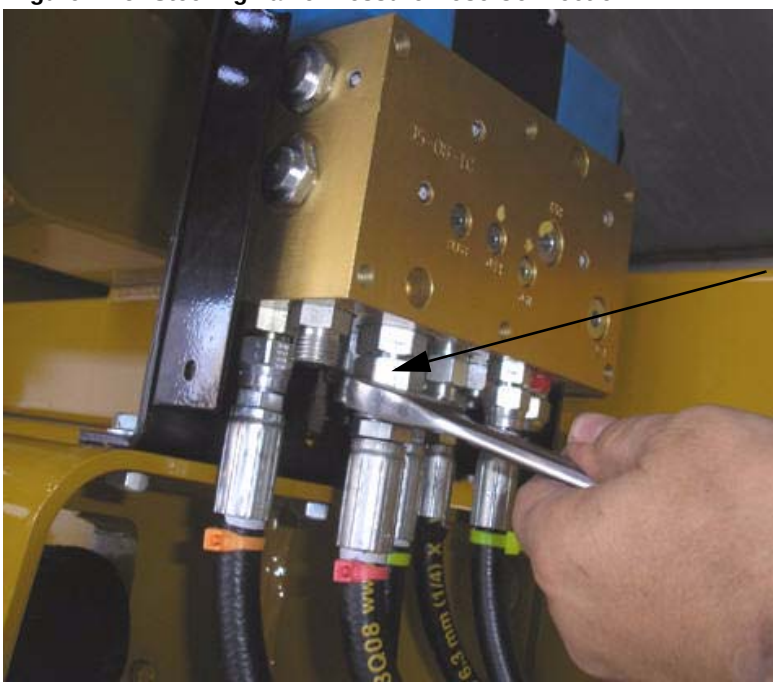
Note: A JIC reducer is required to connect the smaller -6 hose fitting to the larger -8 Run Tee.

---

7. Connect the Pressure hose (Hose 6 in *Figure 2-11*) to the PRESS port on the Steering Valve. See *Figure 2-15*.

Note: The Pressure port on the Steering Valve is the largest port and uses a size 8 hose adapter.

Figure 2-15 Steering Valve Pressure Hose Connection



8. Check every hose individually and confirm that both ends are connected to the correct ports.

9. Refer to the hose diagram in *Figure 2-11* to ensure proper connection.

10. Tighten all hose fittings and adapters.

11. Check and secure all hoses using nylon cable ties.

Note: To avoid hose damage, hoses must not drop below the sprayer frame and must not contact moving parts or hot parts such as exhaust manifolds.

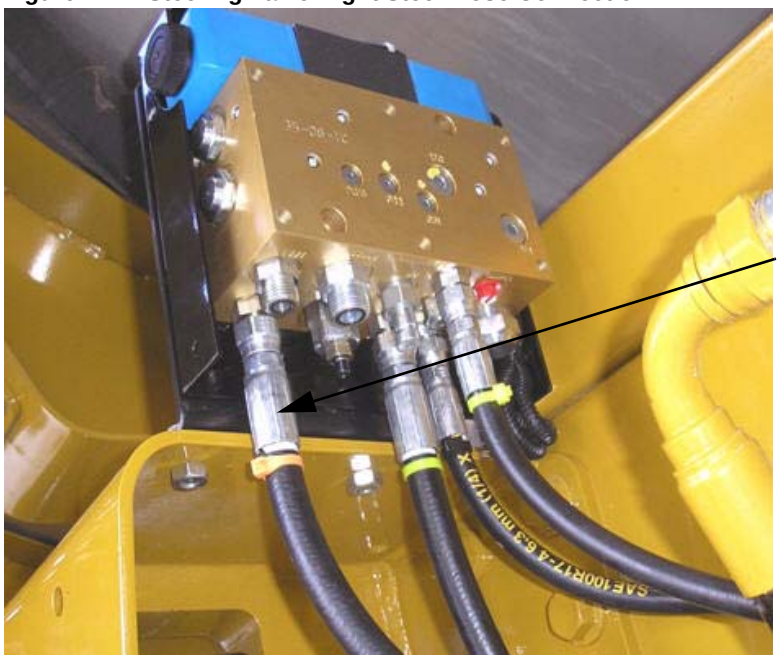
Steering Valve Right Steering Hose Connection

1. Disconnect the Right Steer hose (Hose 1 in *Figure 2-11*) on the steering cylinder located on the left side of the sprayer.
2. Install a Run Tee and reconnect the Right Steer hose to the Run Tee. See *Figure 2-16*.
3. Install an elbow adapter. See *Figure 2-16*.
4. Connect the Right Steer hose (Hose 10 in *Figure 2-11*) plus the longer extender hose (Hose 12 in *Figure 2-11*). See *Figure 2-16*.

Figure 2-16 Steering Cylinder Right Steer Connection

5. Connect the Right Steer hose to the Steering Valve RIGHT port. See *Figure 2-17*.

Figure 2-17 Steering Valve Right Steer Hose Connection



6. Check every hose individually and confirm that both ends are connected to the correct ports.
7. Refer to the hose diagram in *Figure 2-11* to ensure proper connection.
8. Tighten all hose fittings and adapters.
9. Check and secure all hoses using nylon cable ties.

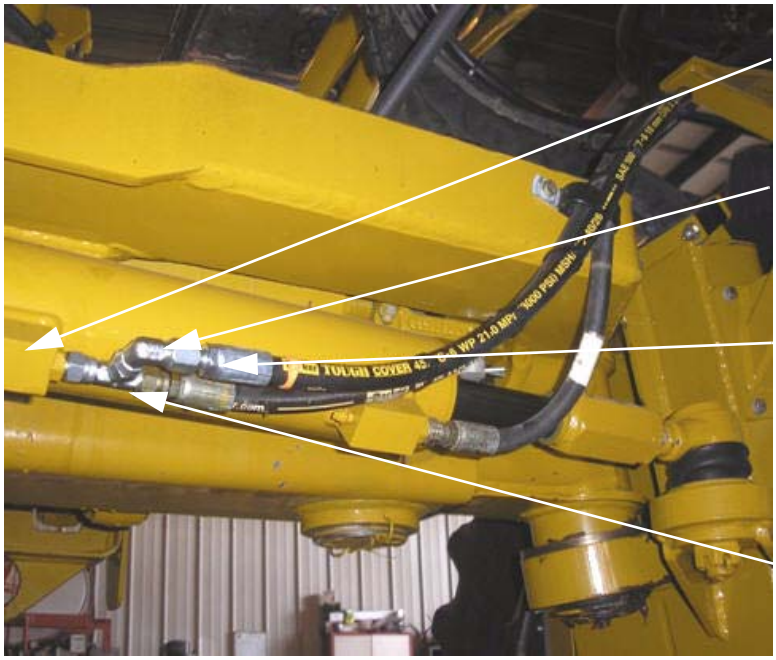
Note: To avoid hose damage, hoses must not drop below the sprayer frame and must not contact moving parts or hot parts such as exhaust manifolds.

Steering Valve Left Steering Hose Connection

1. Disconnect the Left Steer hose (Hose 2 in *Figure 2-11*) located on steering cylinder on the right side.
2. Install a Run Tee and reconnect the Left Steer hose to the Run Tee. See *Figure 2-18*.
3. Install an elbow adapter. See *Figure 2-18*.
4. Connect the Left Steer hose (Hose 11 in *Figure 2-11*). See *Figure 2-18*.

Note: An extender hose (Hose 13 in *Figure 2-11*) provided in the hose kit must be installed to reach the cylinder.

Figure 2-18 Steering Cylinder Right Steer Connection

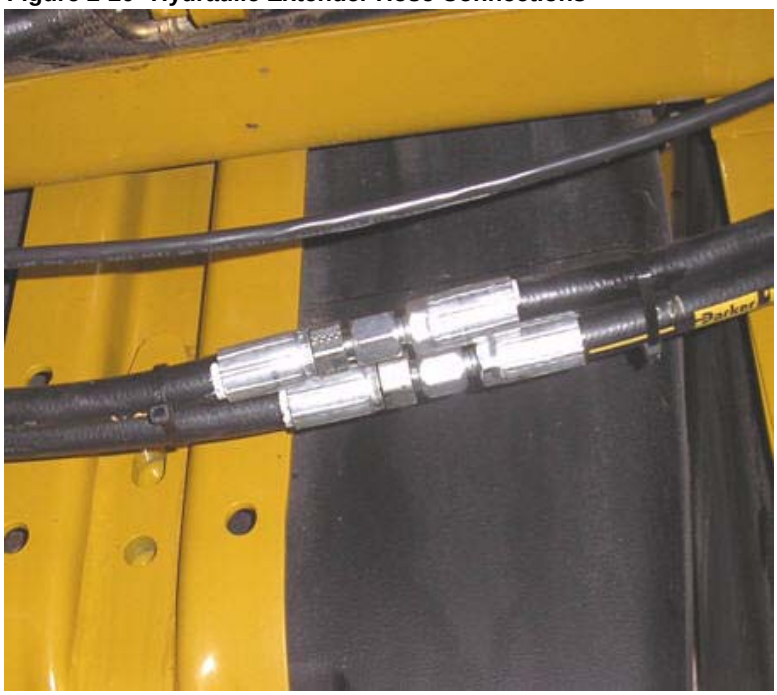


5. Connect the Left Steer hose (Hose 11 in *Figure 2-11*) to the Steering Valve LEFT port. See *Figure 2-19*.

Figure 2-19 Steering Valve Left Steer Hose Connection

Note: A pair of extender hoses are provided in your hose kit to reach the right and left steering cylinders. Use the longer extender hose to reach the steering cylinder that is furthest from the Steering Valve. Route hoses along the vehicle frame in a protected position and secure using cable ties. See *Figure 2-20*.

Figure 2-20 Hydraulic Extender Hose Connections



6. Check every hose individually and confirm that both ends are connected to the correct ports.
7. Refer to the hose diagram in *Figure 2-11* to ensure proper connection.
8. Tighten all hose fittings and adapters.
9. Check and secure all hoses using nylon cable ties.

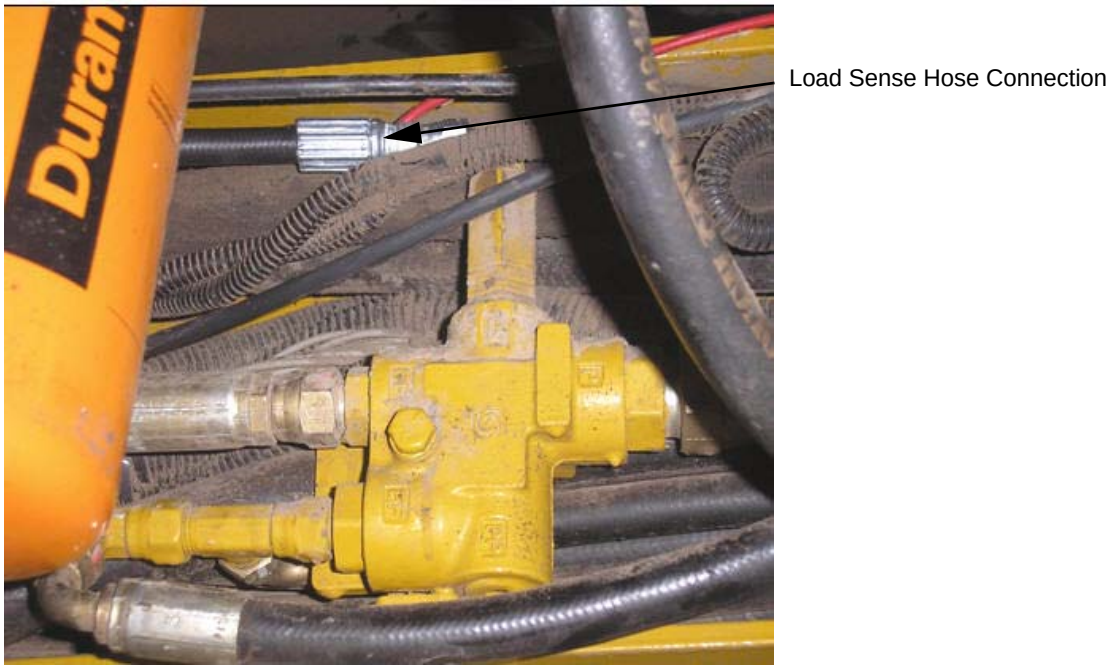
Note: To avoid hose damage, hoses must not drop below the sprayer frame and must not contact moving parts or hot parts such as exhaust manifolds.

Load Sense Out Hose Connection

1. Disconnect the original Load Sense hose (Hose 5 in *Figure 2-11*) from the Priority Valve top. See *Figure 2-21*.

Note: The original Load Sense hose will be connected to the Load Sense Orbitrol connection on the Steering Valve later in the installation process. See the *Orbitrol Load Sense Hose Connection* section of this manual for the steps to connect the original Load Sense hose.

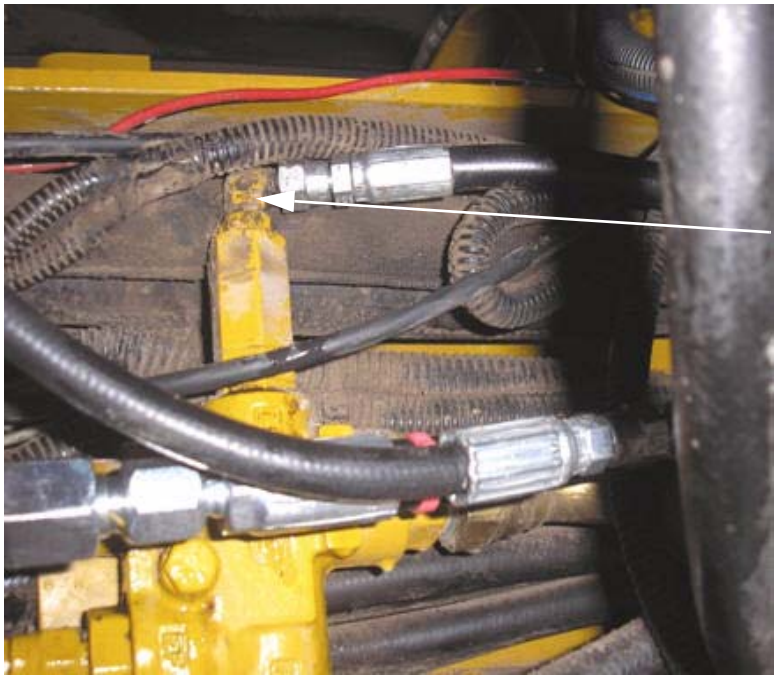
Figure 2-21 Priority Valve Load Sense Out Hose Connection



2. Loosen the Load Sense elbow adapter on the Priority Valve and rotate it towards the Steering Valve Load Sense hose for better hose routing.

3. Tighten the elbow adapter after final adjustments. See *Figure 2-22*.

Figure 2-22 Priority Valve Load Sense Elbow Rotated



4. Connect the opposite LS OUT hose end (Hose 8 in *Figure 2-11*) to the Steering Valve LS OUT port. See *Figure 2-23*.

Figure 2-23 Steering Valve Load Sense Out Connection

5. Check every hose individually and confirm that both ends are connected to the correct ports.
6. Refer to the hose diagram in *Figure 2-11* to ensure proper connection.

Note: The wrong hose connections on the Tank port will prevent correct Relief Valve operation and may damage the Steering Valve.

---

7. Tighten all hose fittings and adapters.
8. Check and secure all hoses using nylon cable ties.

Note: To avoid hose damage, hoses must not drop below the sprayer frame and must not contact moving parts or hot parts such as exhaust manifolds.

Orbitrol Load Sense Hose Connection

1. Connect the LS ORBITROL (Hose 9 in *Figure 2-11*) to the machine's original Load Sense hose (Hose 5 in *Figure 2-11*) that was previously disconnected from the Priority Valve. See *Figure 2-24*.

Note: The LS Orbitrol hose will have a male JIC fitting on one end to mate with the vehicle's Load Sense hose.

Note: Once this hose is connected, the Orbitrol's Load Sense port is connected directly to the Load Sense Orbitrol port on the Steering Valve. You may confirm this important connection by following the Load Sense hose from the Orbitrol to the LS ORBITROL port on the Steering Valve.

Figure 2-24 Original Priority Valve Load Sense Hose Connection

2. Connect the LS ORBITROL hose opposite end (Hose 9 in *Figure 2-11*) to the Steering Valve LS ORBITROL port. See *Figure 2-25*.

Figure 2-25 Steering Valve Load Sense Orbitrol Connection

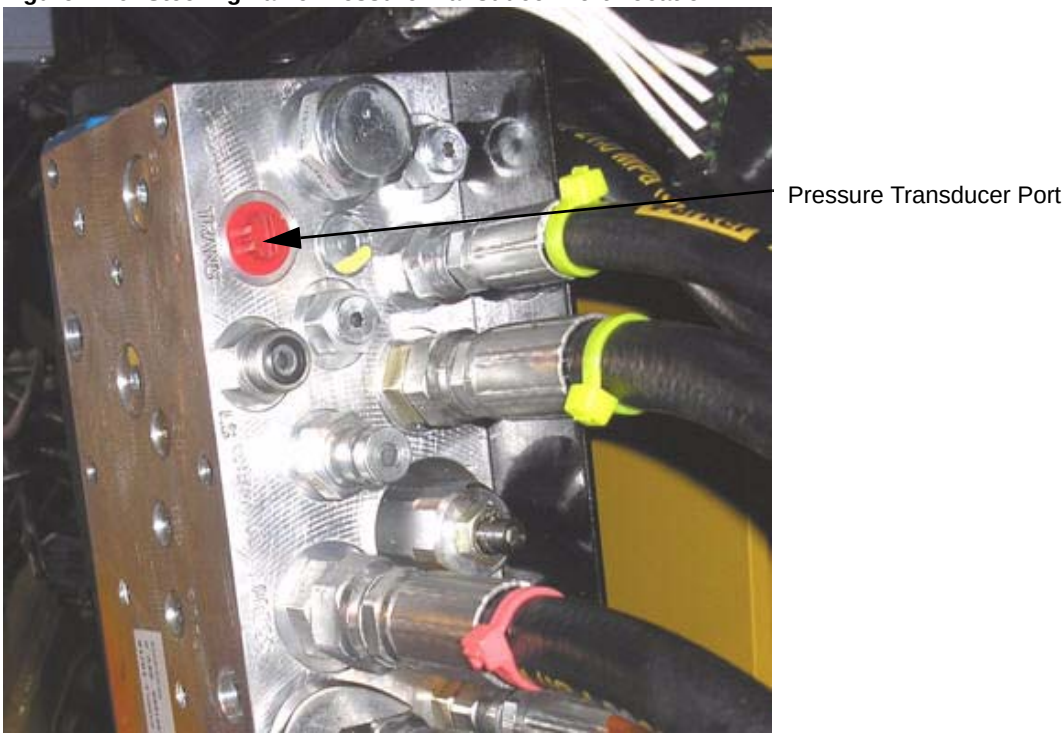
3. Check every hose individually and confirm that both ends are connected to the correct ports.
4. Refer to the hose diagram in *Figure 2-11* to ensure proper connection.
5. Tighten all hose fittings and adapters.
6. Check and secure all hoses using nylon cable ties.

Note: To avoid hose damage, hoses must not drop below the sprayer frame and must not contact moving parts or hot parts such as exhaust manifolds.

Pressure Transducer Installation

1. Identify the Pressure Transducer port on the Steering Valve. It is identified as TRANS. See *Figure 2-26*.
2. Remove the plastic plug before installing the Pressure Transducer. See *Figure 2-26*.

Figure 2-26 Steering Valve Pressure Transducer Port Location



3. Check if an o-ring seal is correctly installed around the top of the Pressure Transducer threads.

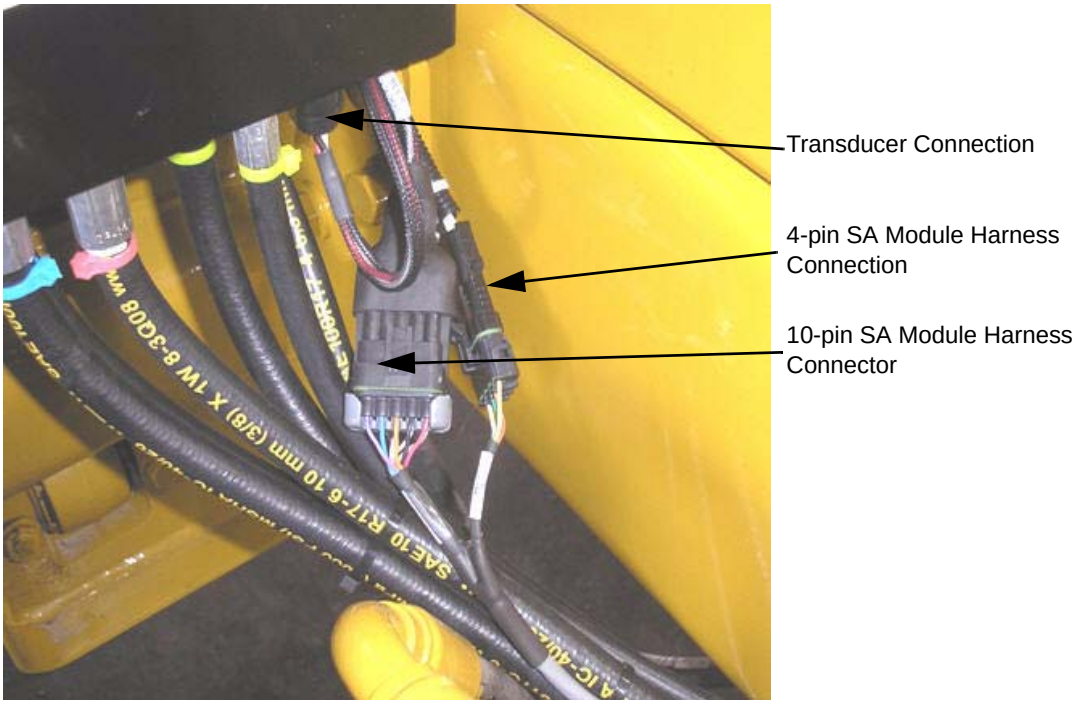
Note: Oil leakage will occur if an o-ring is not installed.

4. Install the threaded Pressure Transducer into the port identified as “TRANS.” See *Figure 2-27*.
5. Tighten the Pressure Transducer using a 3/4” wrench. See *Figure 2-27*. Do not overtighten.

Figure 2-27 Pressure Transducer Installation

6. Connect the short transducer adapter harness to the Pressure Transducer and to the 10-pin connector on the SA Module Harness. See *Figure 2-28*.
7. Connect the 4-pin connector to the SA Module Harness connector. See *Figure 2-28*.

Figure 2-28 Transducer Connections



8. Check every hose individually and confirm that both ends are connected to the correct ports.
9. Refer to the hose diagram in *Figure 2-11* to ensure proper connection.

Note: The wrong hose connections on the Tank port will prevent correct Relief Valve operation and may damage the Steering Valve.

---

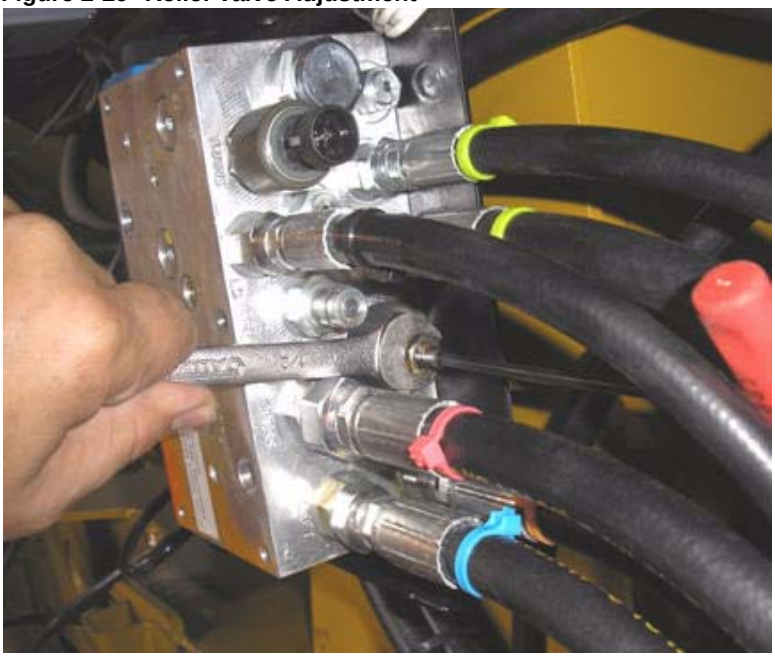
10. Tighten all hose fittings and adapters.
11. Check and secure all hoses using nylon cable ties.

Note: To avoid hose damage, hoses must not drop below the sprayer frame and must not contact moving parts or hot parts such as exhaust manifolds.

Adjusting the Relief Valve

The Steering Valve has a built-in Load Sense Relief Valve that limits the maximum pump pressure when using the AutoSteer system. The Relief Valve must be adjusted after you have completed the hydraulic installation and before you turn on the AutoSteer system. See *Figure 2-29*.

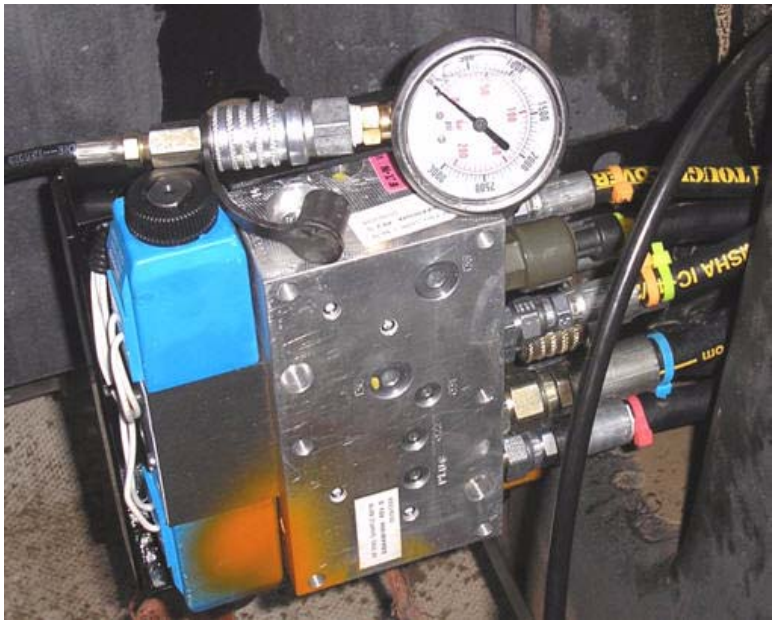
Figure 2-29 Relief Valve Adjustment



Note: When you adjust the Relief Valve, it is done with the Relief Valve mounted on the vehicle and the hydraulic hoses connected.

1. Install a 5000 psi pressure gauge on the valve diagnostics coupler labeled as “GP.” Use a short extension hose on the pressure gauge if necessary for easier reading. See *Figure 2-30*.

Figure 2-30 Pressure Gauge



2. Put transmission into “neutral” or “park” position and turn on the hand brake.
3. Start the engine and leave it at low idle.
4. Immediately check for oil leaks on all hose connections that were opened.
5. Turn the steering wheel full right and then full left and check for correct manuals steering response. Immediately check for oil leaks on all hose connections that were opened. Air in the hoses may cause a slight steering delay when the AutoSteer system is first powered up.
6. Observe the standby pump pressure shown on your pressure gauge. Standby pressure should be very low or around 350 psi. If standby pump pressure is zero or less than 100 psi, you might have inverted the Pressure and Tank hoses.
7. Clear any bystanders from around the sprayer because you will be moving the front wheels in the next step.
8. Press the 100% right or left button in the **Hydraulic Valve** window from the **Steering Components** window. The front wheels will turn quickly towards the stops. Maximum pump pressure will be indicated on the pressure gauge when the wheels hit the stops.
9. Adjust the Relief Valve so the maximum pump pressure is 2600 psi when the wheels hit the stops.
10. Tighten the jam nut on the Relief Valve once the correct pressure setting has been adjusted.
11. Remove your pressure gauge by sliding the sleeve on the quick coupler.

Note: The objective of Load Sense Relief Valve adjustment is to establish a maximum AutoSteer pressure that is slightly higher than the maximum pressure obtained while steering the vehicle manually.

Steering Valve Installation Checklist

1. Valve Bracket bolt is tight.

2. Mounting screws that secure the Steering Valve are tight.

3. Pressure hose is connected to correct port on Steering Valve and Orbitrol.

4. Tank hose connected to correct port on Steering Valve and Orbitrol.

5. LS-OUT hose connected to correct port on Steering Valve and sprayer Priority Valve.

6. LS ORBITROL hose connected to correct ports or hoses at both ends.

7. Right Steer hose connected correctly at both ends.

8. Left Steer hose connected correctly at both ends.

9. Pressure Transducer installed and tight.

10. Checked that all hose fittings are tight.

11. Checked hose routing and cable ties on all hoses.

12. SA Module Harness connected to the two Steering Valve connectors.

13. 5000psi pressure gauge is installed on the Steering Valve test port.

Wheel Angle Sensor (WAS) Installation

This **Wheel Angle Sensor Installation** chapter information is provided in the following sections:

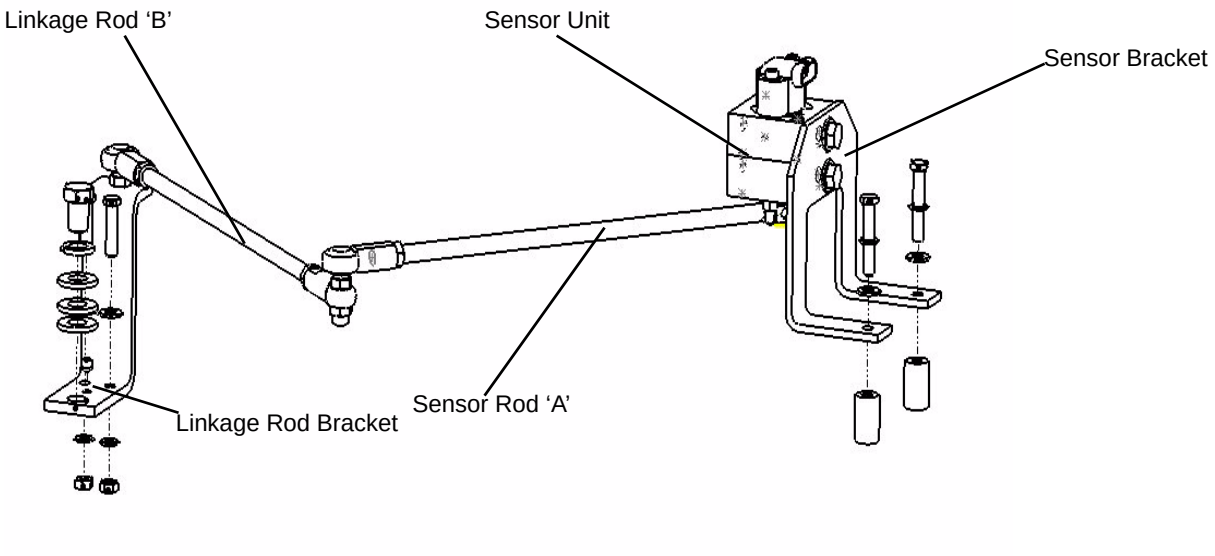
- *Installing Mounting Brackets*
  - *Front Axle Type 1*
  - *Front Axle Type 2*
- *Cut the Wheel Angle Sensor Rods to Length*
- *Assemble the Linkage Rod Hardware*
- *Attach the Wheel Angle Sensor Rods to Brackets and Adjust*

Note: The Wheel Angle Sensor is optional equipment and is not provided with the installation kit. The Wheel Angle Sensor installation instructions are provided for special installations, when required.

This **Wheel Angle Sensor** chapter provides the information necessary to install the Wheel Angle Sensor components.

Figure 3-1 shows the Wheel Angle Sensor assembly fully assembled.

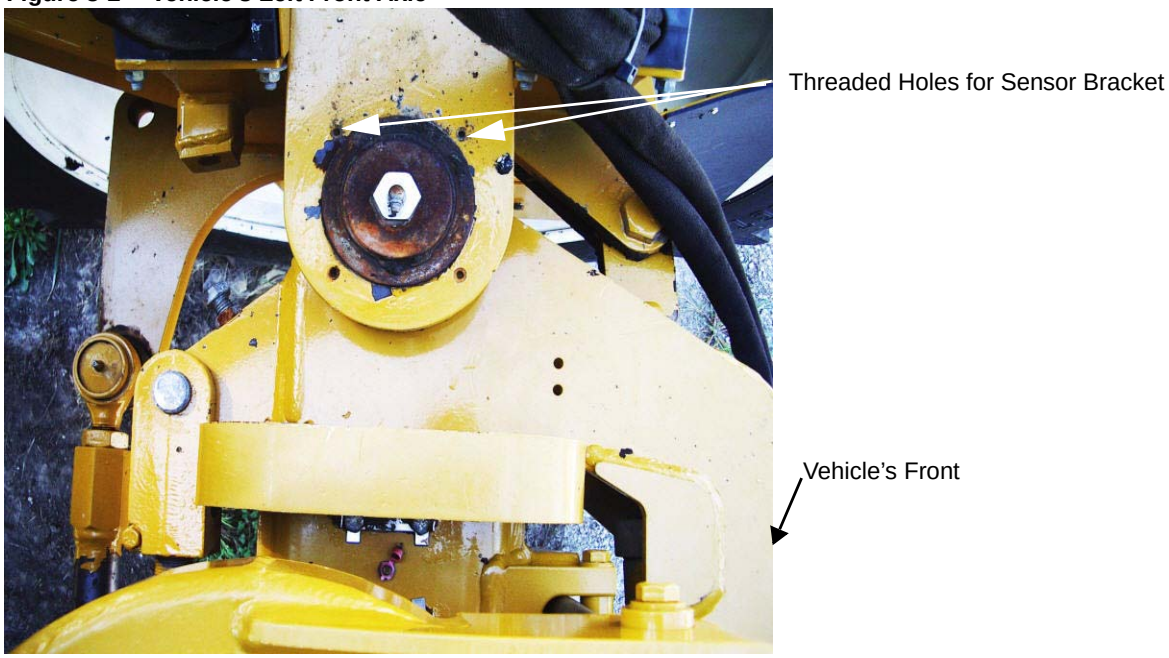
Figure 3-1 Wheel Angle Sensor



Installing Mounting Brackets

1. The Wheel Angle Sensor mounts on the vehicle's left front axle. The Ag-Chem Rogator 64/74 sprayer front axle has two blind threaded holes for installing the sensor bracket. See *Figure 3-2*.

Figure 3-2 Vehicle's Left Front Axle

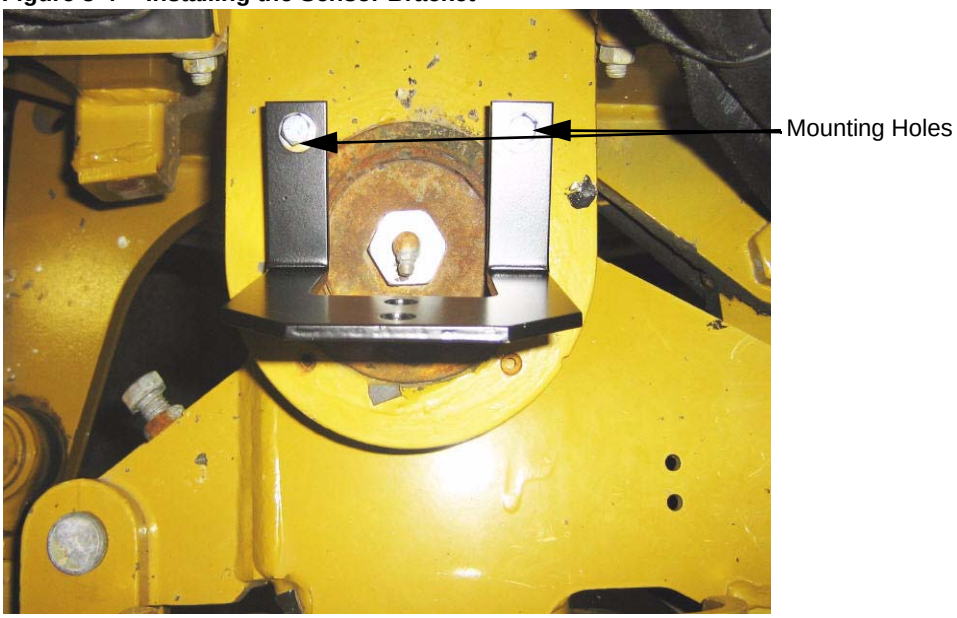


2. Before installing the sensor bracket, use a 1/4-20 tap to clean out the blind threaded holes near the kingpin. See *Figure 3-3*.

Figure 3-3 Cleaning the Blind Threaded Holes

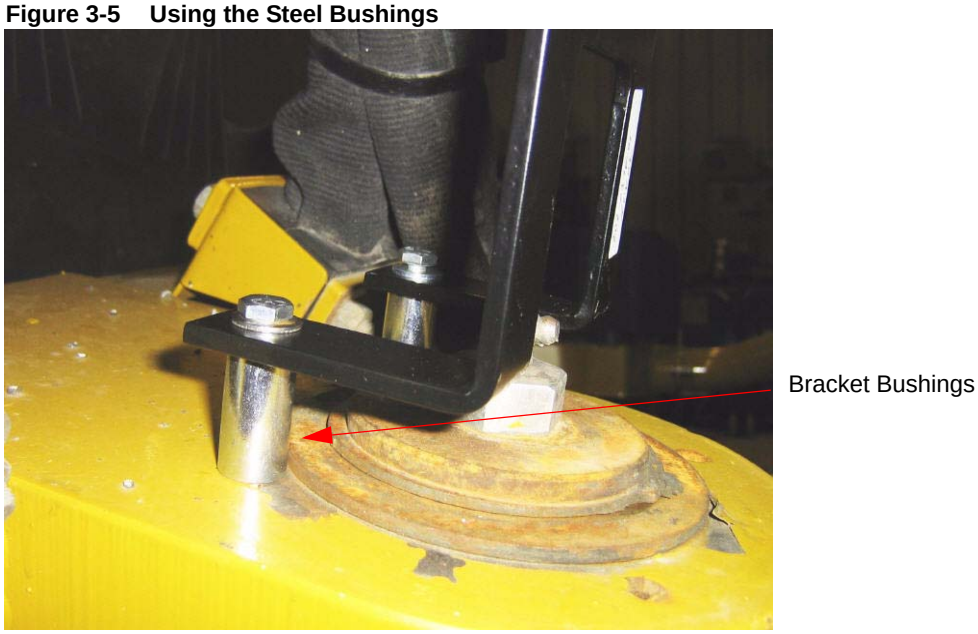
3. Align the sensor bracket holes to the threaded holes and fasten the sensor bracket to the front axle using the two steel bushings and longer bolts provided with your kit. See *Figure 3-4*.

Figure 3-4 Installing the Sensor Bracket



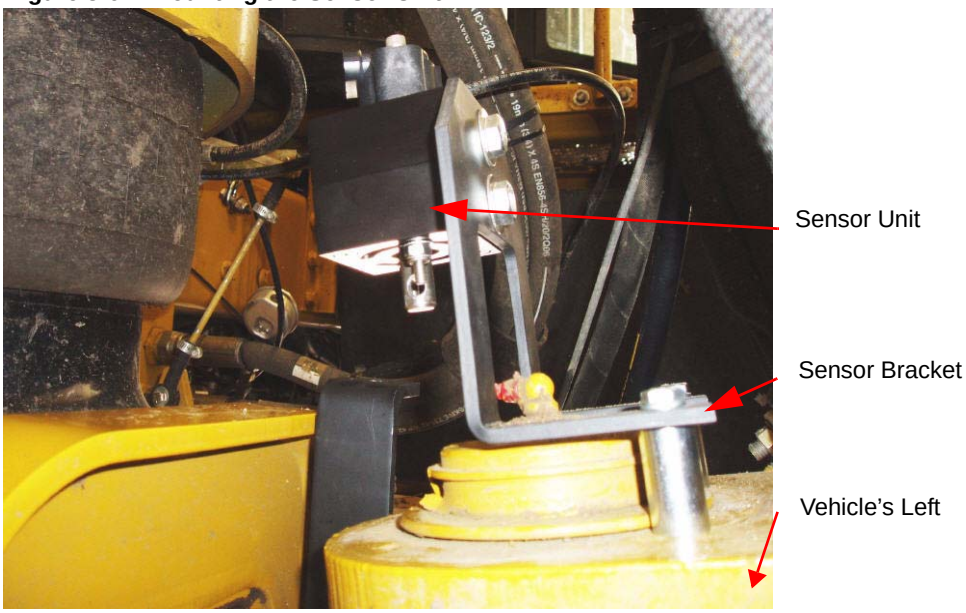
4. *Figure 3-5* shows how the steel bushings are being used to elevate the sensor bracket over the front axle kingpin.

Figure 3-5 Using the Steel Bushings



5. Mount the Sensor Unit to the sensor bracket as shown in *Figure 3-6*.

Figure 3-6 Mounting the Sensor Unit



6. There are two front axle types on the Ag-Chem Rogator 64/74 sprayer. Depending on the front axle type you encounter, there are two different ways for installing the Linkage Rod Bracket.

- *Front Axle Type 1* on page 49
- *Front Axle Type 2* on page 51

Front Axle Type 1

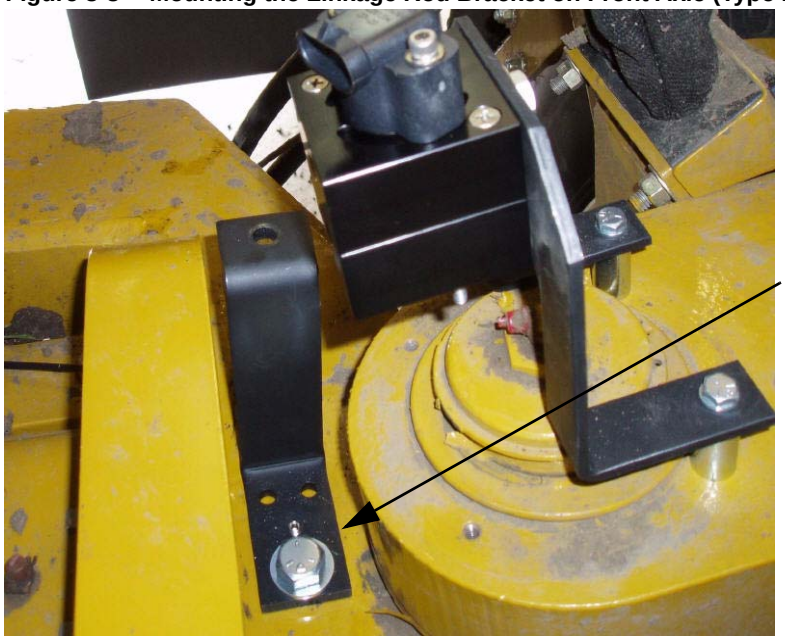
1. The first front axle type has a single 1/2” tapped hole directly inboard of the kingpin as shown in *Figure 3-7*.

Figure 3-7 Front Axle with 1/2" Tapped Hole (Type 1)

2. Install the Type 1 Linkage Rod Bracket as shown in *Figure 3-8*.

Note: To prevent the Linkage Rod Bracket from rotating, drill a small recess into the axle under the set screw provided in the Linkage Rod Bracket.

Figure 3-8 Mounting the Linkage Rod Bracket on Front Axle (Type 1)



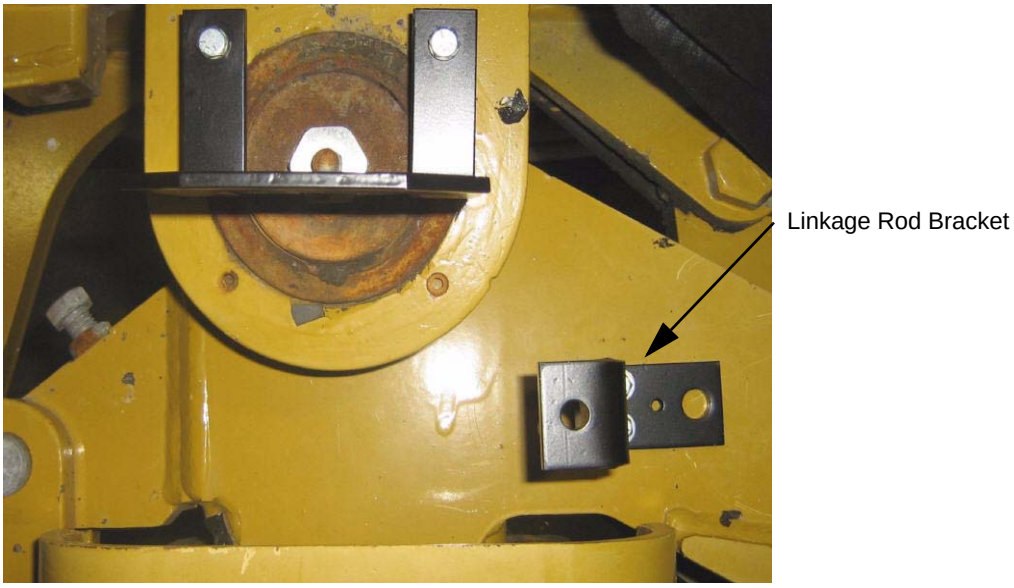
Front Axle Type 2

1. The second front axle type has a pair of small holes slightly forward of the kingpin as shown in *Figure 3-9*.

Figure 3-9 Front Axle with a Pair of Small Holes (Type 2)

2. Use the two bolts provided with your installation kit to install the Type 2 Linkage Rod Bracket as shown in *Figure 3-10*.

Figure 3-10 Mounting the Linkage Rod Bracket on Front Axle (Type 2)



Cut the Wheel Angle Sensor Rods to Length

The Wheel Angle Sensor rods are shipped longer than they need to be. These rods must be cut to the proper length to allow the linkage rods to provide the Wheel Angle Sensor the maximum number of counts as the steering wheel is turned from full right to full left. Due to the variability of the possible mounting positions and axle options, it is left to the installer to verify the correct length for each individual installation and to cut the rods to length.

Table 3-1 provides the typical rod lengths that work for most installations. Before cutting the linkage rods to these measurements, verify that the Wheel Angle Sensor brackets can attach to the vehicle as shown in this manual and that they are attached the correct distance from any reference points shown. If the axle does not allow the Wheel Angle Sensor brackets to be installed as shown, do not cut the rods until it is determined what the proper lengths are for your installation. Due to possible variations in the mounting positions, these measurements could be different. These measurements are provided as a reference only. The installer is responsible for verifying that the provided measurements will work prior to cutting the rods.

Use a metal hack saw and vice, as shown in *Figure 3-12*, to cut the Wheel Angle Sensor linkage rods to the proper lengths.

Note: It is advisable to attach a nut on the side of the metal rod that is going to be kept in order to clean the threads after the cut has been made.

Note: Clean-up the ends of the threaded rods using a file and check if the threads are good using a steel nut: the nut should engage smoothly on the threaded rod.

The lengths of the rods are different depending on which side of the axle it is installed on. The table shows the lengths for both sides. Protect the threads from damage while cutting the rods. *Figure 3-11* shows where the measurements provided in *Table 3-1* are measured from.

Figure 3-11 Linkage Rod Cut Length Measurement Points

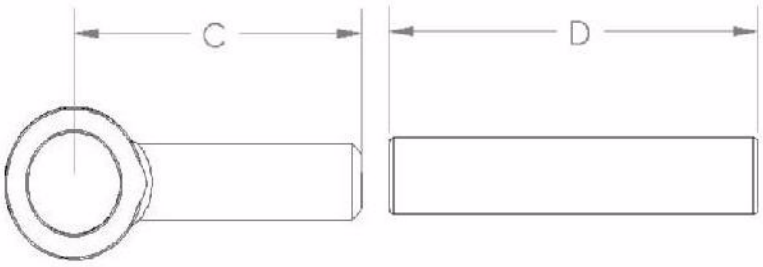
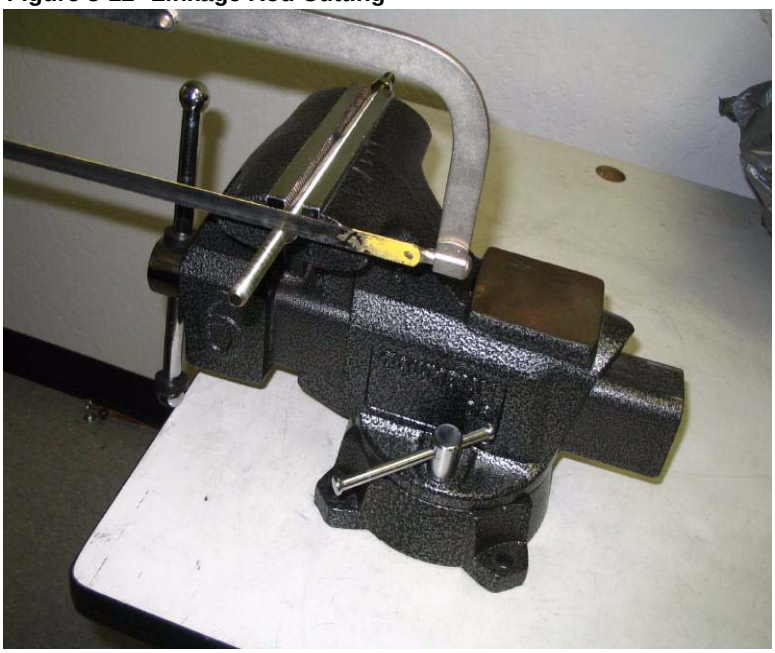


Table 3-1 Linkage Rod Cut Lengths

Item	Length
Rod C	1.5 inches (38mm)[a]
Rod D	2.0 inches (51mm)[a]

a. This measurement is the linkage rod length prior to assembly with the ball joints.

Figure 3-12 Linkage Rod Cutting



Note: The “after-assembly” center-to-center lengths of each linkage rod are shown in *Table 3-2*. *Figure 3-13* shows the measurement points for the assembled linkage rods.

Assemble the Linkage Rod Hardware

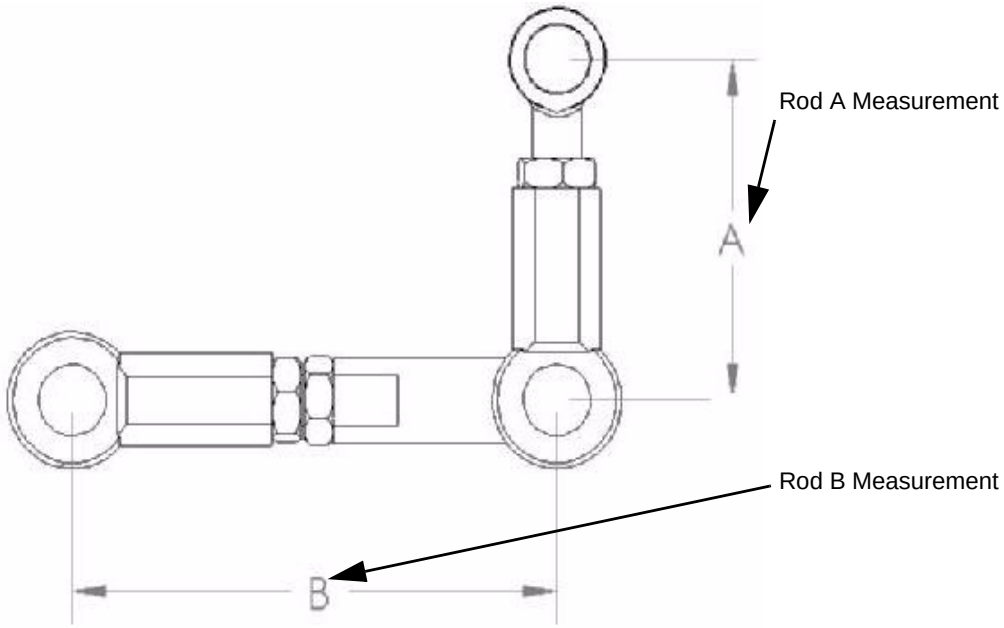
For most installations, use *Table 3-2* to adjust the lengths of the rod assemblies to the values shown. *Figure 3-13* shows where the measurement points for each rod are taken. Due to the variation of axle types and installation points, these measurements are provided as a reference only. Before connecting the steering rods and turning the steering axle verify that these lengths will work and the sensor will not be damaged.

Table 3-2 Assembled Linkage Rod Length

Item	Length
Rod A	2.5 inches (64 mm)[a]
Rod B	3.75 inches (95 mm)[a]

a. This measurement is the linkage rod length after assembly with the ball joints.

Figure 3-13 Linkage Rod Measurement Points (Assembled)

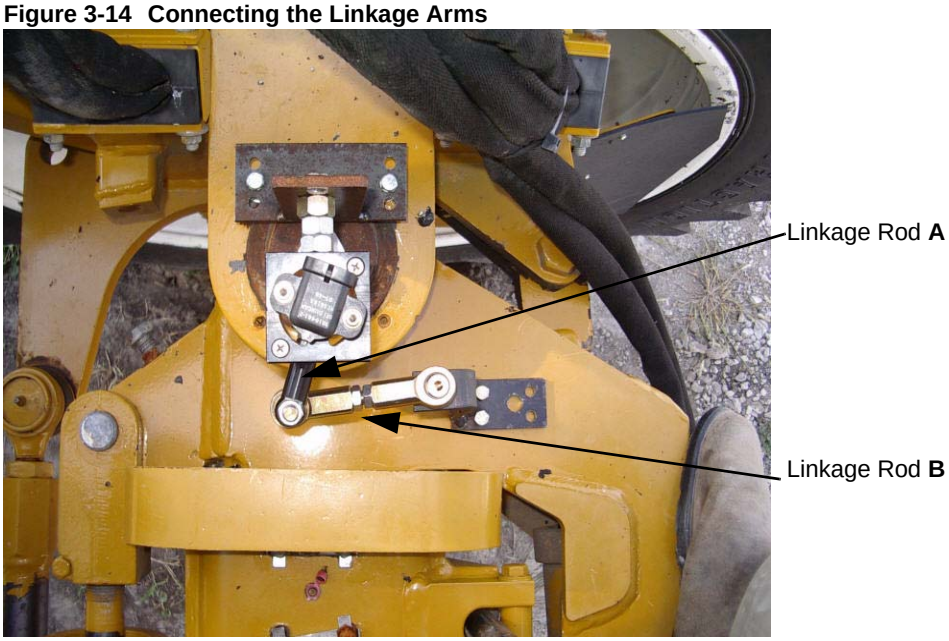


Note: The threaded rods must be cut to the correct lengths before final assembly.

Attach the Wheel Angle Sensor Rods to Brackets and Adjust

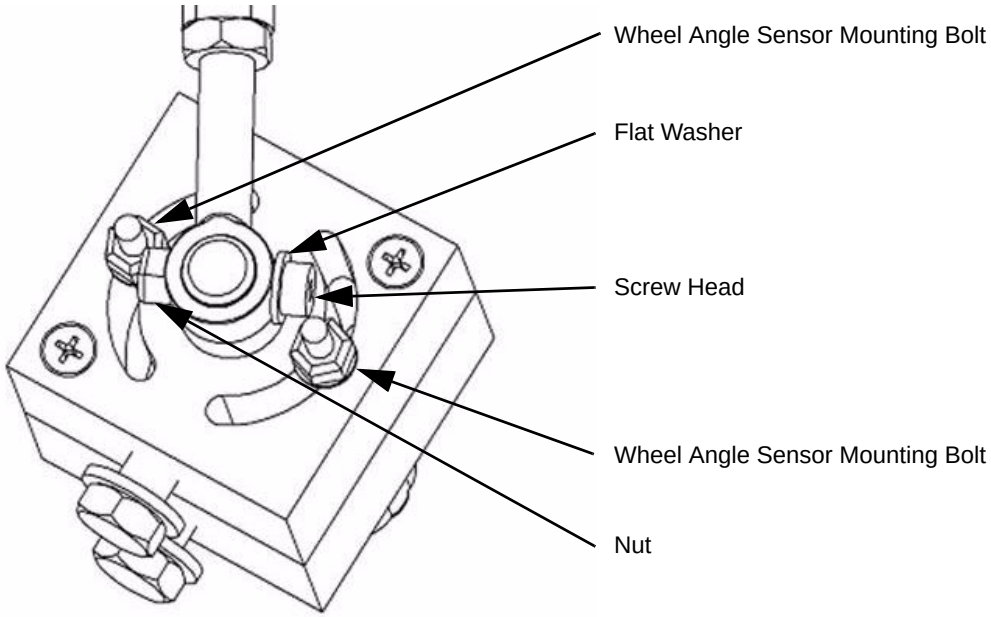
1. Install Linkage Rod **A** on the Wheel Angle Sensor shaft. See *Figure 3-14*.
2. Install Linkage Rod **B** on the sensor bracket using a ball joint. See *Figure 3-14*.

Figure 3-14 Connecting the Linkage Arms



3. Ensure a flat washer is placed under the screw head when attaching the linkage rod to the sensor shaft. See *Figure 3-15*.

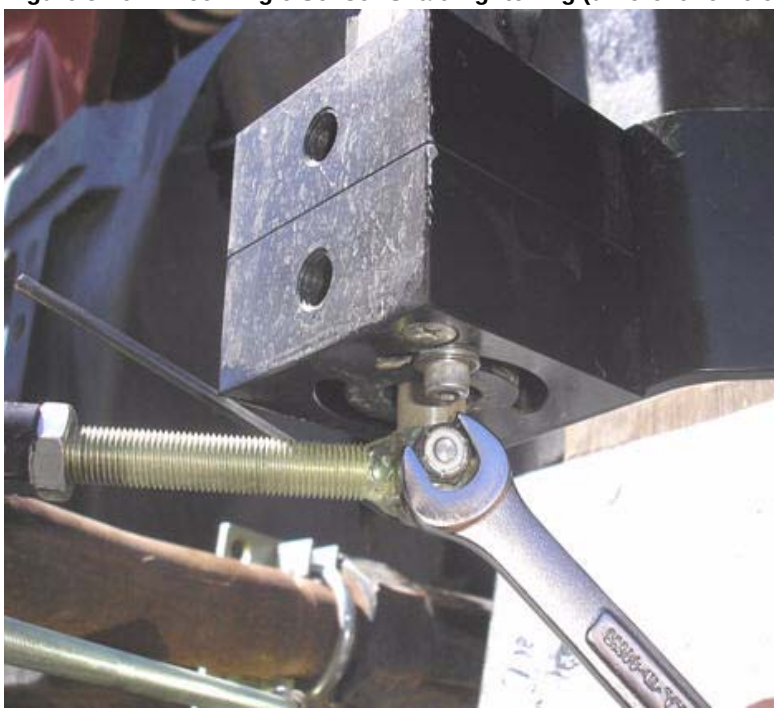
Figure 3-15 Washer on Shaft Screw



Note: The washer should be on the bolt head side and not the nut side of the assembly.

4. Tighten the screw on the sensor shaft. Use a 1/8” hex key and a 3/8” wrench. See *Figure 3-16*.

Figure 3-16 Wheel Angle Sensor Shaft Tightening (different vehicle shown)



5. Tighten all jam nuts on the threaded rods.

⚠ WARNING

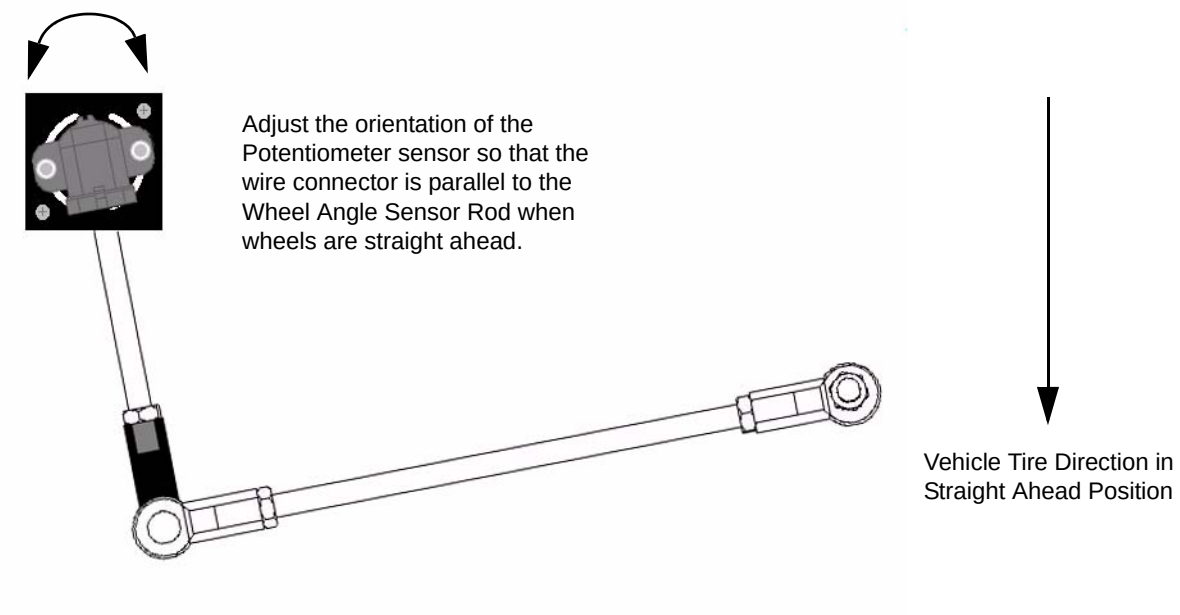
Always shut down the vehicle when working around the steering axle and checking and adjusting the Wheel Angle Sensor rod lengths. The steering axle could move suddenly and cause severe injury or death.

Note: Never attach the linkage rods to Wheel Angle Sensor rod and turn the steering wheels manually or automatically until the fit has been verified. The linkage rods must remain apart while the steering wheels are turned to the maximum right and left positions and then temporarily attached at these positions. Failure to do this may cause the Wheel Angle Sensor or vehicle to become damaged.

Note: After the linkage rods are assembled in the following steps, they should move freely without touching any other parts and without overextending. Make any necessary adjustments to the linkage rods if there is an interference problem.

6. With the linkage rods disconnected, manually turn the steering wheel so that the wheels are centered (the vehicle will travel straight ahead when moving).
7. Temporarily attach the linkage rods.
8. Rotate the Wheel Angle Sensor potentiometer on top of the mounting block so that the plastic wire connector is parallel to the Wheel Angle Sensor rod. See *Figure 3-17*.

Figure 3-17 Adjust Potentiometer Angle to Match Straight Ahead



9. After the potentiometer has been adjusted, tighten the potentiometer bolts with a 5/32” hex key and a 3/8” wrench. See *Figure 3-18*.

Figure 3-18 Wheel Angle Sensor Potentiometer (different vehicle shown)

10. Disconnect the linkage rods and turn the steering wheel manually to the full left position.

11. Reattach the linkage assembly and verify that the sensor or rods will not be damaged. Adjust the rod lengths as necessary.

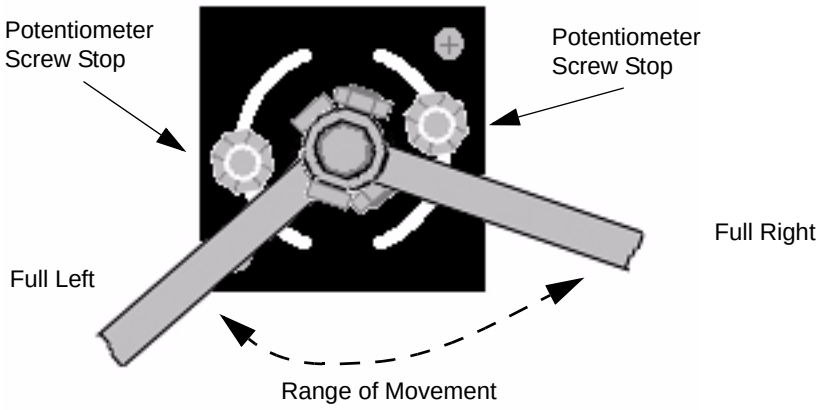
12. Disconnect the linkage rods and turn the steering wheel manually to the full right position.

13. Reattach the linkage assembly and verify that the sensor will not be damaged. Adjust the rod lengths as necessary.

14. Repeat *Step 6* through *Step 13* until the rod lengths have been adjusted and the potentiometer is centered to get the maximum sensor movement. The maximum movement is reached when the Wheel Angle Sensor rod will sweep from approximately 3/16 inch (5mm) from both bolt heads holding the potentiometer on to the block when the wheels are turned to the maximum right and left positions. See *Figure 3-19*.

Figure 3-19 Maximum Sensor Movement

Wheel Angle Sensor as Seen from the Bottom



Note: An Ohm meter can also be used to determine if there is enough sensor movement. Connect the Ohm meter to pins A and B of the Wheel Angle Sensor. Measure the Ohm reading at the maximum left and right position. After subtracting the smaller number from the larger number, there should be at least a 3.75 kilohms change. The reading should also never go below 1.6 or higher than 6.6 kilohms as this is reaching the limits of the potentiometer and could damage the sensor.

15. Once all the adjustments are complete, tighten all lock nuts and bolts on the linkage and Wheel Angle Sensor rod. A 1/2” and two 9/16” wrenches are required to tighten all the connections.

16. Tighten the bolt securing the two linkage rods together. See *Figure 3-20*.

Figure 3-20 Linkage Rod Ball Joint Bolt (different vehicle shown)

17. *Figure 3-14* shows the completed Wheel Angle Sensor installation.

SA Module Installation

The **SA Module Installation** chapter contains information in the following sections:

- *SA Module Mounting Orientation*
- *Mount the SA Module*

SA Module Mounting Orientation

The SA Module can also only be mounted in certain orientations. *Figure 4-1* shows the correct mounting positions and *Figure 4-2* shows incorrect mounting positions.

Figure 4-1 Correct SA Module Mounting Orientations

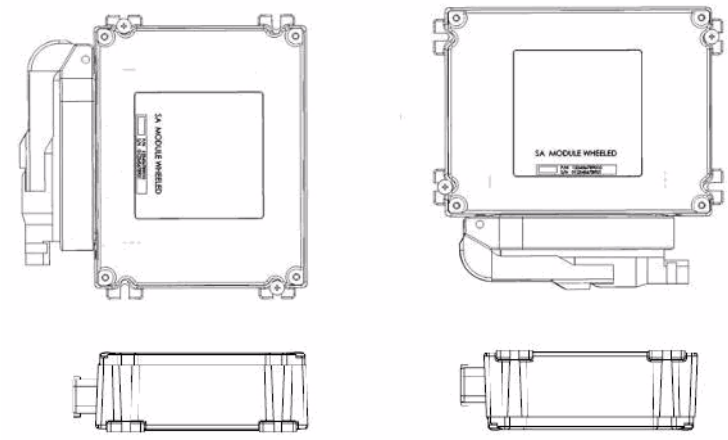
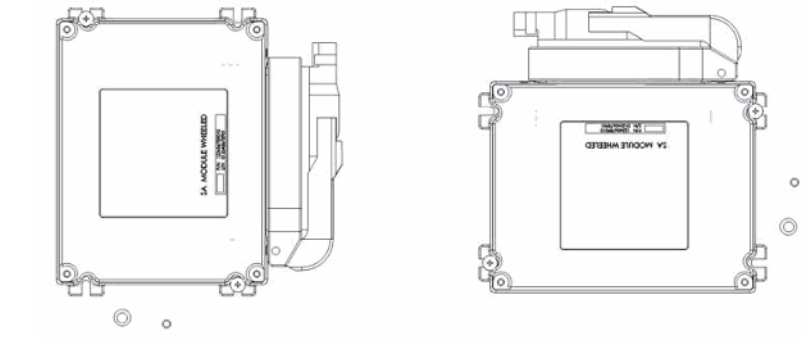


Figure 4-2 Incorrect SA Module Mounting Orientations



Mount the SA Module

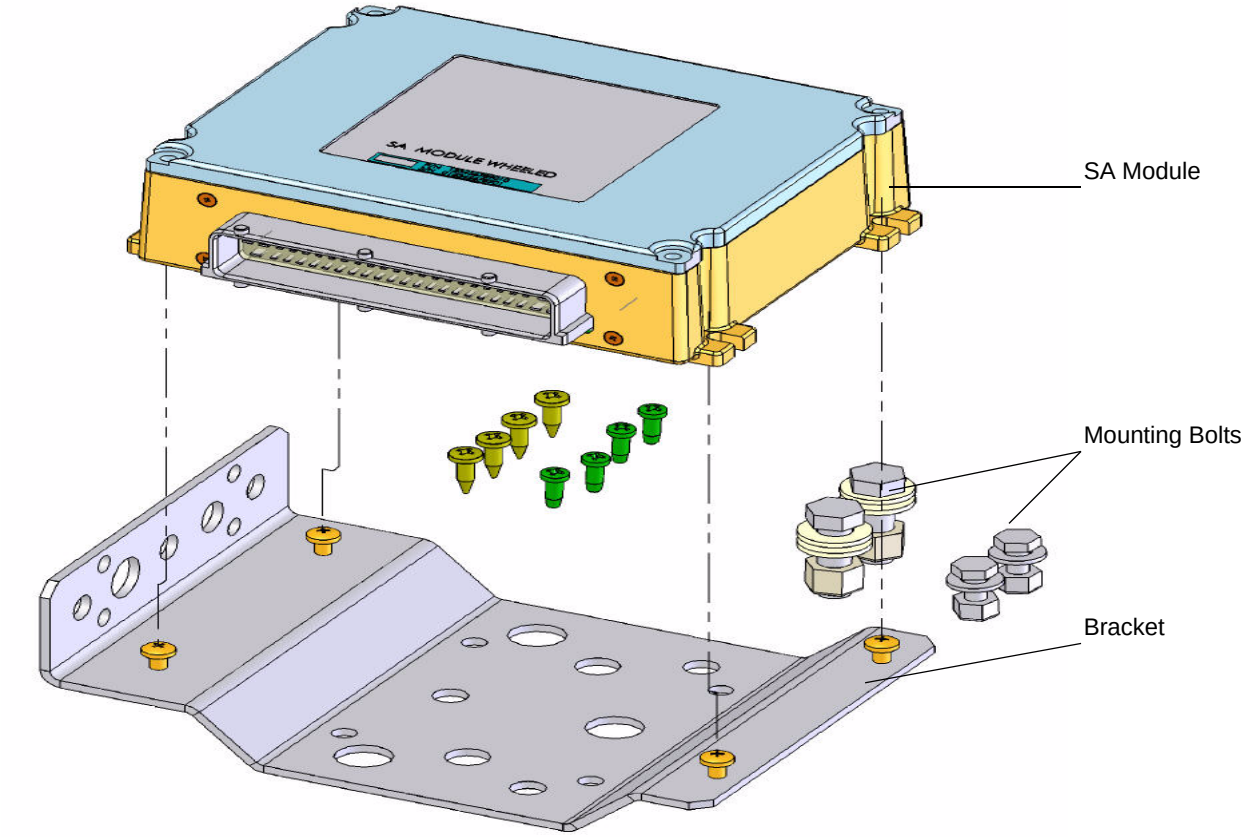
Due to the variety of options available on vehicles and the possible configuration differences, it may be necessary to install the SA Module in location other than the example shown here. If an alternative location is required, choose a location where the SA Module can be protected from damage from moving parts or crop debris and excessive moisture from weather and cleaning equipment.

Note: The SA Module Harness must be routed in a protected position to avoid damage from the moving parts.

---

1. Mount the SA Module Bracket in a protected position under the frame. Secure the Bracket using existing bolts on the sprayer or the bolts and screws provided in the installation kit. See *Figure 4-3* and *Figure 4-4*.

Figure 4-3 SA Module and SA Module Bracket Overview

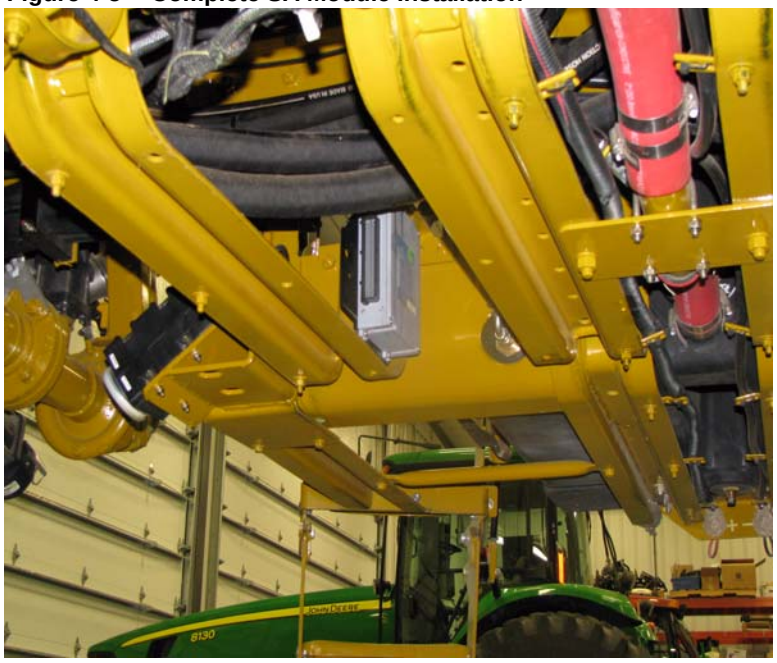


2. Remove the two lower nuts from the hose spacer, attach the SA Module Bracket, and then reinstall the two original nuts. See *Figure 4-4*.

Figure 4-4 SA Module Attaching Point

3. A complete SA Module installation is shown in *Figure 4-5*.

Figure 4-5 Complete SA Module Installation



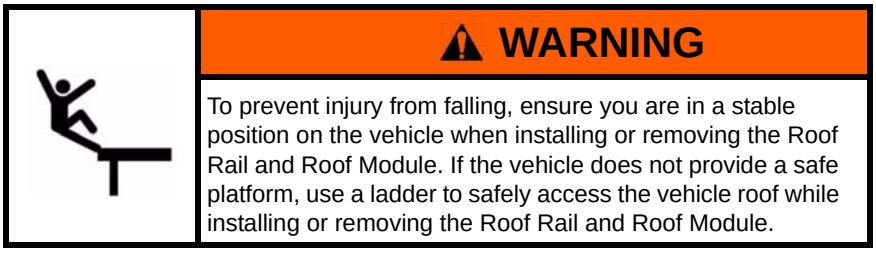
Roof Module Installation

This **Roof Module Installation** chapter contains information in the following sections:

- *Safety Notes*
- *Cab Identification*
- *Installation Procedures*
  - *John Deere Cab Installation*
    - *Roof Rail Installation*
    - *Antenna Attachment*
    - *Roof Module Mounting*
  - *Crenlo Cab Installation*
    - *Roof Rail Installation*
    - *Antenna Attachment*
    - *Roof Module Mounting*

Safety Notes

- The AutoSteer system must be powered OFF when installing or removing the Roof Module.
- The Roof Module must always be firmly secured to the Roof Rail using the hardware whenever the vehicle is in operation to prevent the Roof Module from releasing from its bracket and falling.
- The Roof Module must be removed when transporting the vehicle at speeds above 30 mph (50 km/h).
- Ensure you are in a stable position on the sprayer platform when removing the Roof Module, so that you do not fall or drop the Roof Module.
- Use a ladder to install the AutoSteer Roof Rail and Roof Module.



Cab Identification

Ag-Chem Rogator 64/74 sprayers can be equipped with both John Deere or Crenlo cabs. To determine if your vehicle is equipped with a John Deere or a Crenlo cab, refer to *Figure 5-1*.

Figure 5-1 Difference between John Deere and Crenlo Cabs

John Deere Cab:

It has two large bolts located on the front of the roof.

Crenlo Cab:

It has six large bolts in three pairs spread front to back.

Installation Procedures

The information for Roof Module installation is contained in the following sections:

- *John Deere Cab Installation*
- *Crenlo Cab Installation*

John Deere Cab Installation

The information for Roof Module installation on John Deere cabs is contained in the following sections:

- *Roof Rail Installation*
- *Antenna Attachment*
- *Roof Module Mounting*

Roof Rail Installation

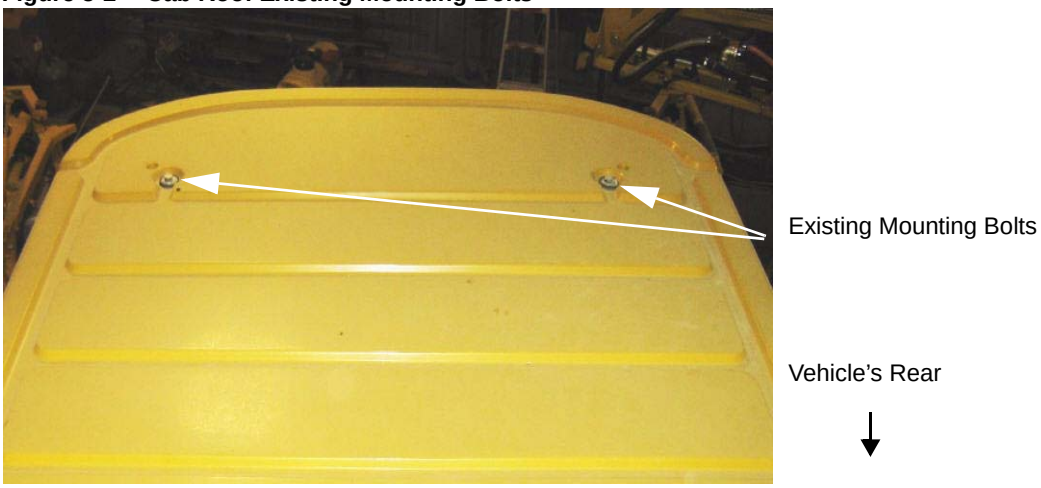
1. Place the ladder as close as possible to the side of the cab.

Note: A ladder is necessary to install the Roof Rail and Roof Module.

---

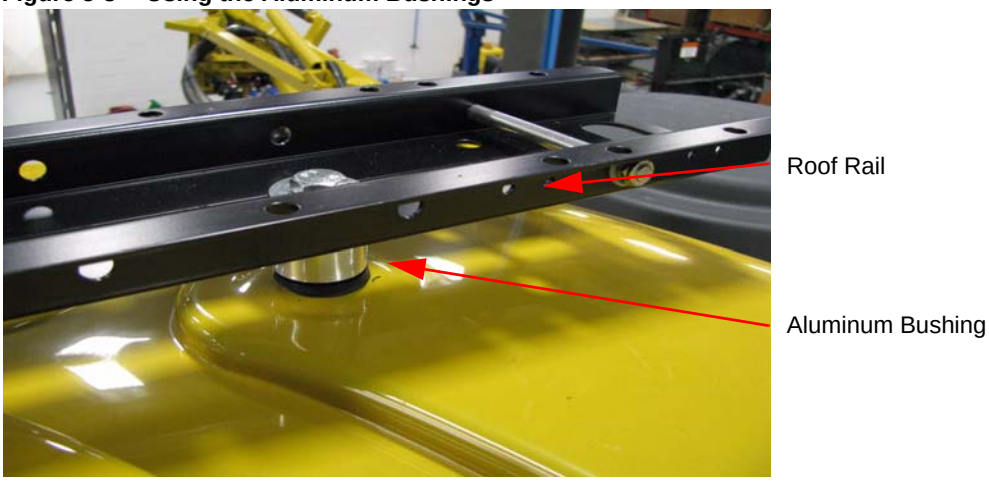
2. The Ag-Chem Rogator 64/74 sprayers equipped with a John Deere combine cab have two large bolts located on the front of the roof. To install the Roof Rail, use a 3/4” wrench to remove the two cab roof bolts located at the front as shown in *Figure 5-2*.

Figure 5-2 Cab Roof Existing Mounting Bolts



3. Center and align the Roof Rail holes to the cab roof mounting holes and fasten the Roof Rail to the roof using the two aluminum bushings and longer bolts provided with your kit. For a lower installation, you can use a stack of flat washers as spacers so the Roof Rail does not touch the roof. The holes and the Locking Pin must be on the left side of the vehicle.
4. *Figure 5-3* shows how the aluminum bushings are being used to elevate the Roof Rail over the cab roof.

Figure 5-3 Using the Aluminum Bushings



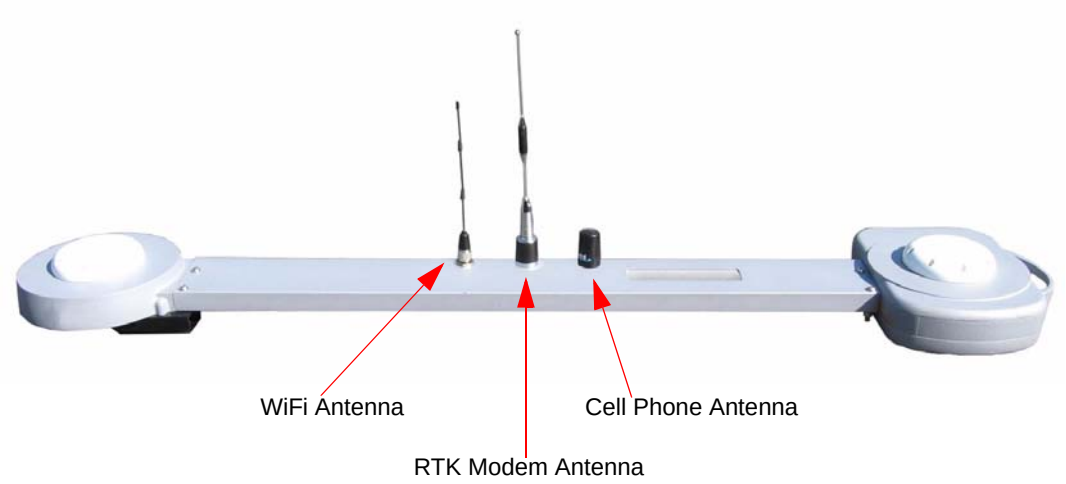
Note: The Roof Rail should be mounted so it is level when the vehicle is placed on level ground. Steering performance will be compromised if the Roof Module is not level when the vehicle is on level ground.

Antenna Attachment

1. Attach the three antennas to the proper Roof Module antenna connections. See *Figure 5-4*.

Note: Hand tighten the connections. Do not over tighten.

Figure 5-4 Attach the Antenna



Roof Module Mounting

1. Place the Roof Module onto the Roof Rail. The cable connector must be on the left side of the vehicle, facing the rear. See *Figure 5-5*.

Figure 5-5 Roof Module on Roof Rail

2. Remove the Locking Pin from the Roof Rail. See *Figure 5-6*.

Figure 5-6 Removing the Locking Pin

3. Adjust the Roof Module position on the Roof Rail.
4. Re-insert the Locking Pin to lock the Roof Module onto the vehicle. See *Figure 5-6*.

Note: The Locking Pin can be inserted from either side of the Roof Rail.

Crenlo Cab Installation

The information for Roof Module installation on Crenlo cabs is contained in the following sections:

- *Roof Rail Installation*
- *Antenna Attachment*
- *Roof Module Mounting*

Roof Rail Installation

1. Place the ladder as close as possible to the side of the cab.

Note: A ladder is necessary to install the Roof Rail and Roof Module.

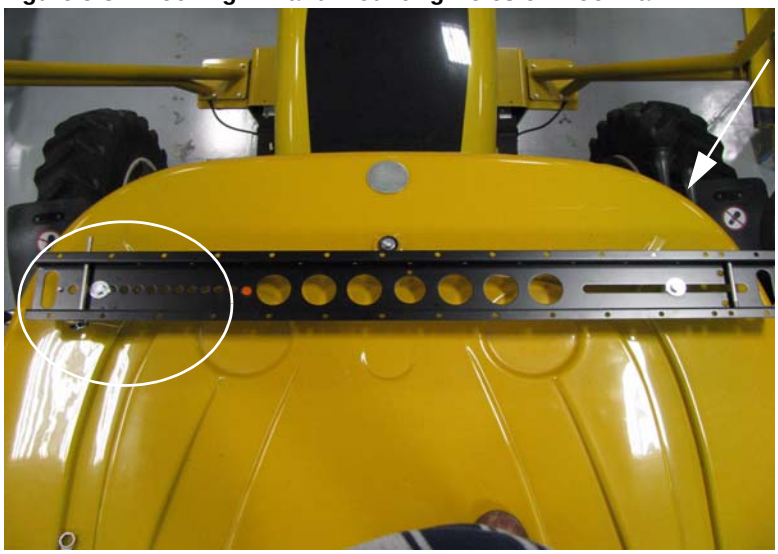
2. The Ag-Chem Rogator 64/74 sprayers equipped with a Crenlo cab have six large bolts in three pairs spread front to back. To install the Roof Rail, remove the two cab roof bolts located at the rear as shown in *Figure 5-7*.

Figure 5-7 Existing Mounting Bolts

3. Center and align the Roof Rail holes to the cab roof mounting holes and fasten the Roof Rail to the roof using the two aluminum bushings and longer bolts provided with your kit.

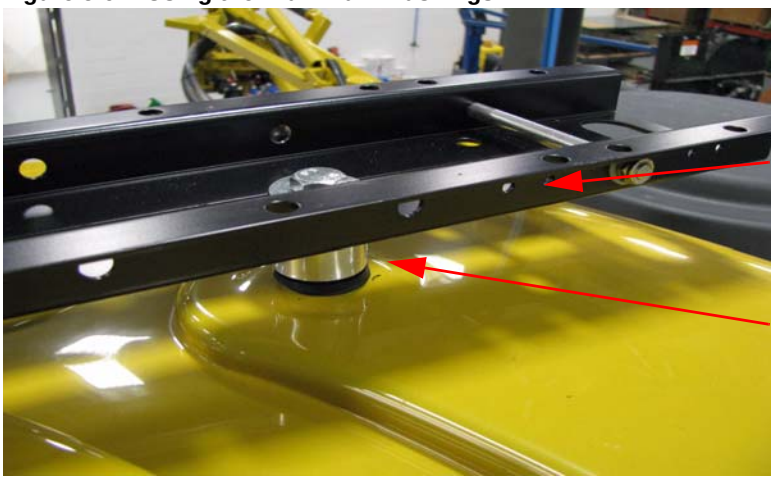
Note: The holes and the Locking Pin must be on the left side of the vehicle. See *Figure 5-8*.

Figure 5-8 Locking Pin and Mounting Holes on Roof Rail



4. *Figure 5-9* shows how the aluminum bushings are being used to elevate the Roof Rail over the cab roof.

Figure 5-9 Using the Aluminum Bushings



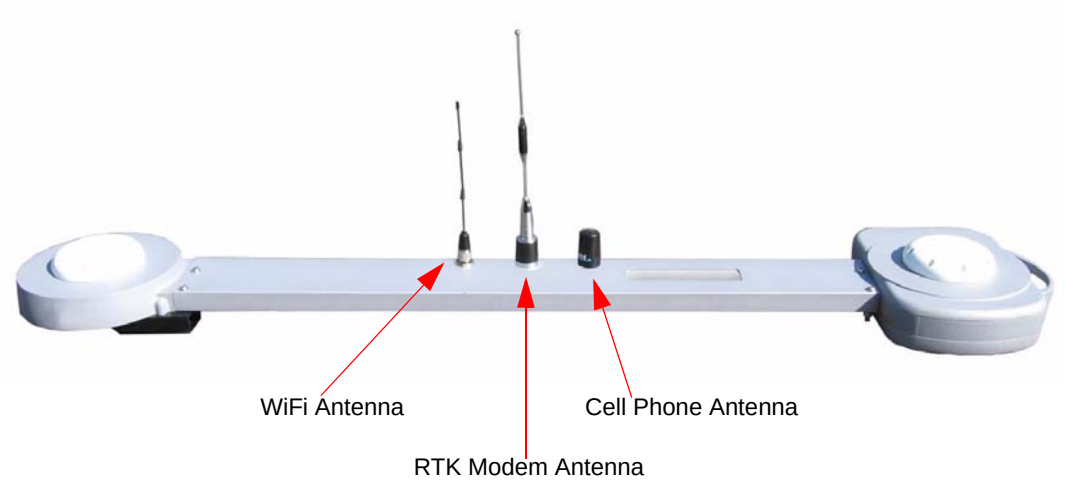
Note: The Roof Rail should be mounted so it is level when the vehicle is placed on level ground. Steering performance will be compromised if the Roof Module is not level when the vehicle is on level ground.

Antenna Attachment

1. Attach the three antennas to the proper Roof Module antenna connections. See *Figure 5-10*.

Note: Hand tighten the connections. Do not over tighten.

Figure 5-10 Attach the Antenna



Roof Module Mounting

1. Place the Roof Module onto the Roof Rail. The cable connector must be on the left side of the vehicle, facing the rear. See *Figure 5-11*.

Figure 5-11 Roof Module on Roof Rail

2. Remove the Locking Pin from the Roof Rail. See *Figure 5-12*.

Figure 5-12 Removing the Locking Pin

3. Adjust the Roof Module position on the Roof Rail.
4. Re-insert the Locking Pin to lock the Roof Module onto the vehicle. See *Figure 5-12*.

Note: The Locking Pin can be inserted from either side of the Roof Rail.

Display Installation

This **Display Installation** chapter contains information for installing and adjusting the Display in the following sections:

- *Cab Identification*
- *Installation Procedures*
  - *John Deere Installation*
    - *Display Bracket Overview*
    - *Display Bracket Assembly and Mounting*
  - *Crenlo Installation*
    - *Display Bracket Overview*
    - *Display Bracket Assembly and Mounting*

Cab Identification

Ag-Chem Rogator 64/74 sprayers can be equipped with both John Deere or Crenlo cabs. To determine if your vehicle is equipped with a John Deere or a Crenlo cab, refer to *Figure 6-1*.

Figure 6-1 Difference between John Deere and Crenlo Cabs

John Deere Cab:

It has two large bolts located on the front of the roof.

Crenlo Cab:

It has six large bolts in three pairs spread front to back.

Installation Procedures

- *John Deere Installation*
- *Crenlo Installation*

John Deere Installation

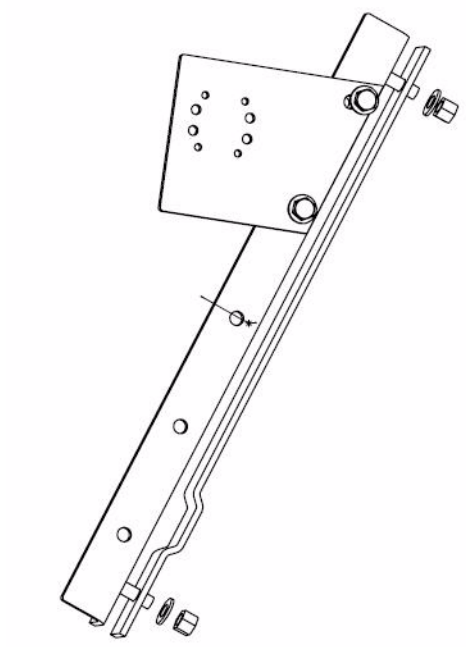
The information for Display installation on John Deere cabs is contained in the following sections:

- *Display Bracket Overview*
- *Display Bracket Assembly and Mounting*

Display Bracket Overview

Figure 6-2 shows the Display Bracket to use during the installation of the Display in your sprayer's cab. This bracket has a narrow reinforcement strip that must be installed on the back side of the window frame; use the two provided hex screws to clamp the bracket on the window frame.

Figure 6-2 John Deere Display Bracket

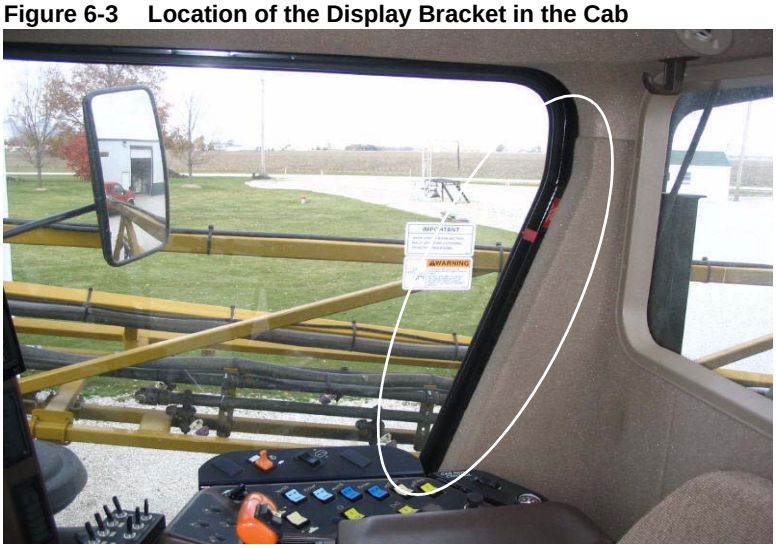


Note: The provided Display Bracket is similar to the Bracket used in John Deere combine cabs.

Display Bracket Assembly and Mounting

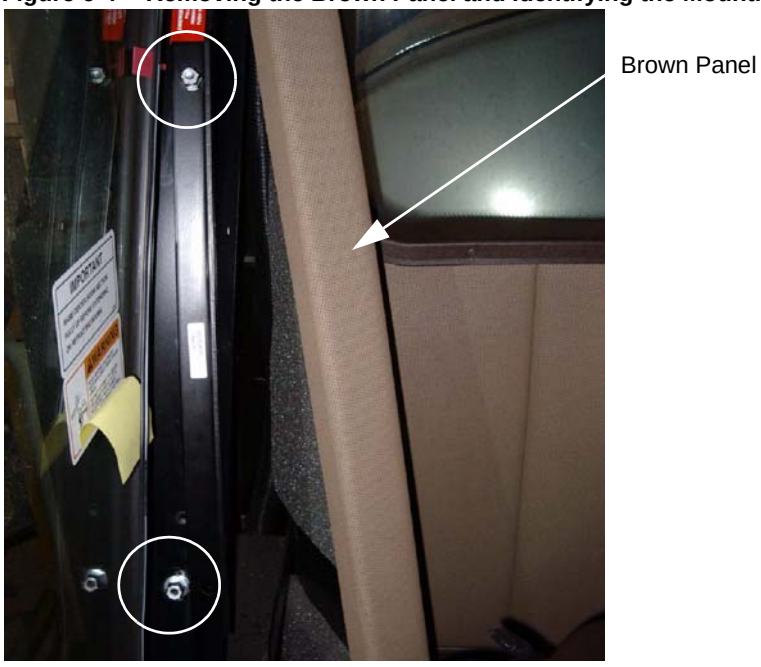
1. *Figure 6-3* shows where to mount the Display Bracket. Install the Display Bracket on the right of the cab (in cabs similar to John Deere combines cabs).

Figure 6-3 Location of the Display Bracket in the Cab



2. Remove the brown panel before installation and identify the two existing mounting bolt/holes as shown in *Figure 6-4*:

Figure 6-4 Removing the Brown Panel and Identifying the Mounting Bolts



3. Mount the bracket assembly as shown in *Figure 6-5*. Adjust the height as necessary.

Figure 6-5 Mounting the RAM Ball and Bracket

4. Install the RAM Base Ball on the front of the bracket using the four screws and nuts. See *Figure 6-5*

Note: Refer to the Display user manual for the remaining Display-specific installation instructions.

Crenlo Installation

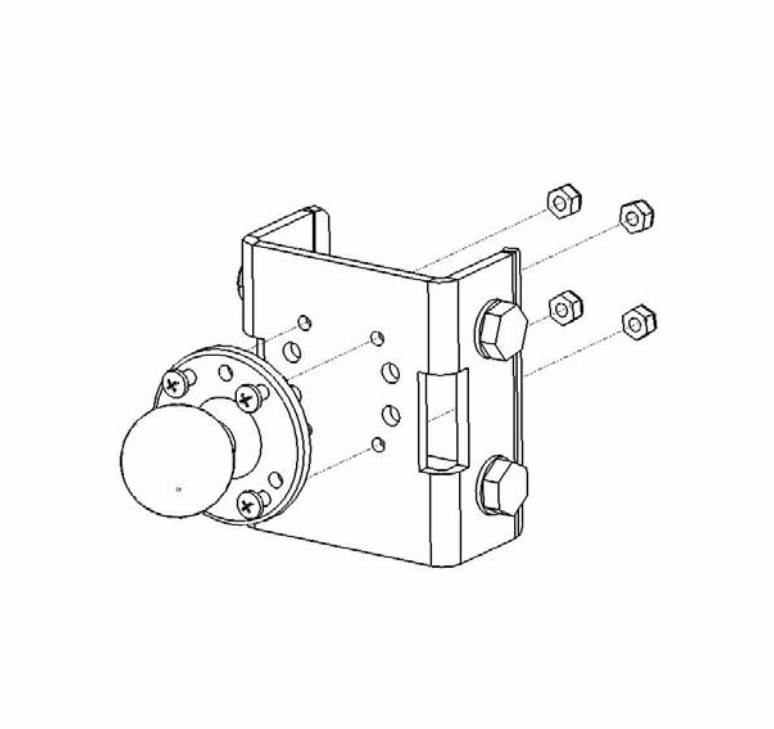
The information for Display installation on Crenlo cabs is contained in the following sections:

- *Display Bracket Overview*
- *Display Bracket Assembly and Mounting*

Display Bracket Overview

Figure 6-6 shows the Display Bracket to be used to complete the installation of the Display in your sprayer's cab.

Figure 6-6 Crenlo Display Bracket

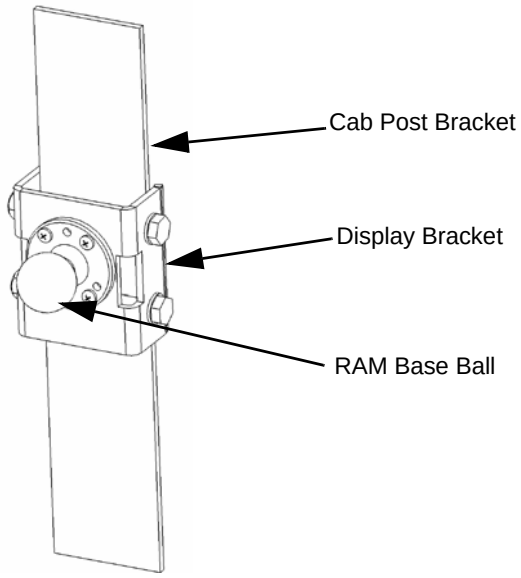


Display Bracket Assembly and Mounting

Note: The Display components may be different depending on the model vehicle the installation is being performed upon.

1. Mount the Display Bracket to the steel bracket on the right side of the cab post.
2. Adjust the mounting height and tighten the two hex bolts.
3. Install the RAM Base Ball (1-1/2” diameter) on the Display Bracket. See *Figure 6-7*.

Figure 6-7 Mounting the Display Bracket



4. Secure the RAM Base Ball using four 10-32x3/4 Phillips screws and locknuts. *Figure 6-7* shows the completed installation.

Note: Refer to the Display user manual for the remaining Display-specific installation instructions.

Connecting System Cables

This **Connecting System Cables** chapter provides information for connecting the Main Cable Harness and the SA Module Cable Harness to the various vehicle and AutoSteer components in the following sections:

- *SA Module Harness*
  - *SA Module Connection*
  - *Wheel Angle Sensor Connection*
  - *Steering Valve Connection*
- *Main Cable Harness*
  - *Roof Module*
  - *Main Cable Harness Connections Inside Cab*
  - *SA Module Harness*
- *Power Supply Connection*
  - *Cab Power Connection*
  - *Battery Power Connection*

SA Module Harness

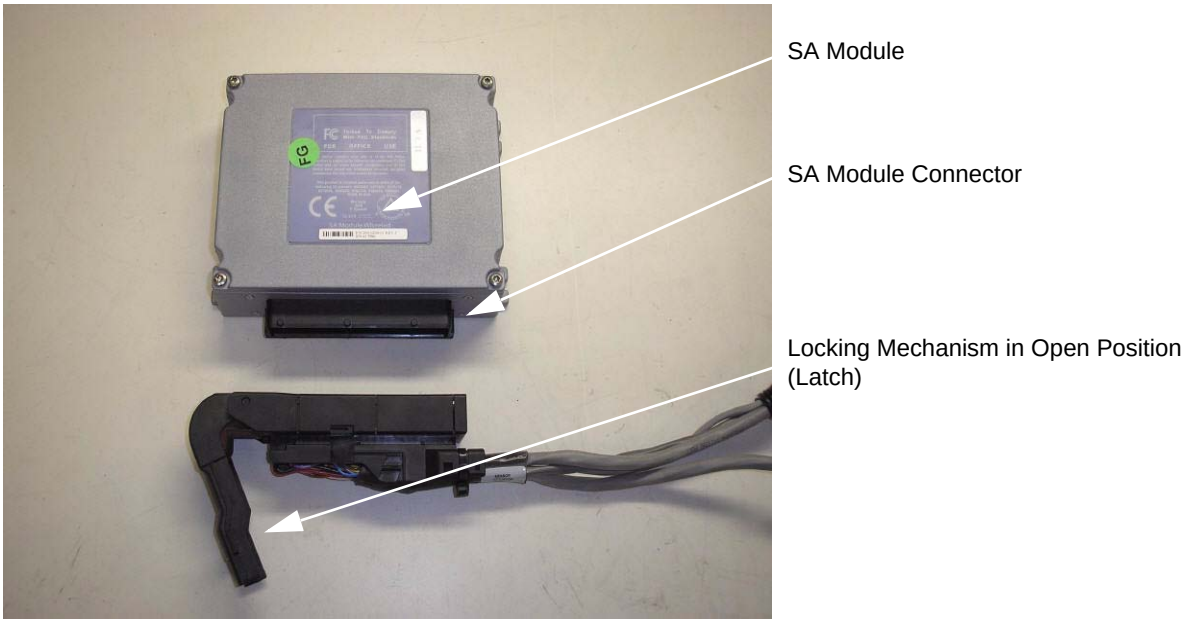
This **SA Module Harness** section contains the following sub-sections:

- *SA Module Connection*
- *Wheel Angle Sensor Connection*
- *Steering Valve Connection*

SA Module Connection

1. Align the SA Module Harness connector to the SA Module. See *Figure 7-1*.
2. Open the connector latch lever. See *Figure 7-1*.

Figure 7-1 Connecting SA Module Connector



3. Press the SA Module Harness connector onto the SA Module connector.

Note: You can damage the connectors if your force them into position. Do not force them together or use tools.

4. Press the latch lever closed until it clicks and locks the connector. See *Figure 7-2*.

Figure 7-2 Closing the SA Module Connector

Note: If you need to disconnect the SA Module connector, you must open the latch lever before attempting to pull the connectors apart.

5. Close the cable connector locking mechanism as shown in *Figure 7-3*.

Figure 7-3 SA Module Connector (closed)

Wheel Angle Sensor Connection

Note: This connection to the Wheel Angle Sensor is only required when using the AutoSteer Wheel Angle Sensor.

1. Route the cable in a protected position and secure it with cable ties. See *Figure 7-4*.

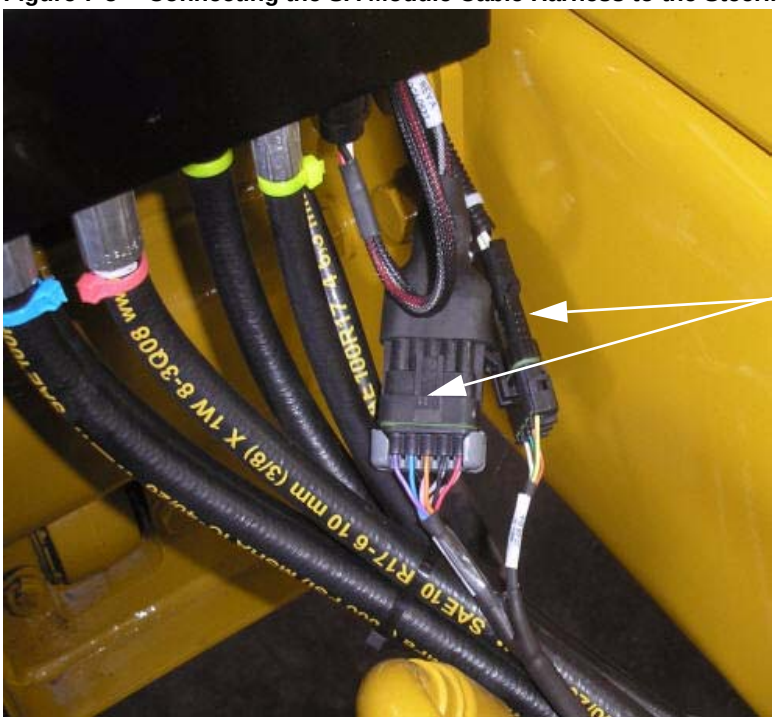
Note: Route the cable along the hoses with sufficient free play to allow steering rotation of the front wheels.

Figure 7-4 Connecting the SA Module Cable Harness to the Wheel Angle Sensor

Steering Valve Connection

1. Route and secure the steering cable from the SA Module to the Steering Valve. Connect the cable to the two valve connectors shown in *Figure 7-5*.

Figure 7-5 Connecting the SA Module Cable Harness to the Steering Valve



Main Cable Harness

This Main Cable Harness section contains the following sub-sections:

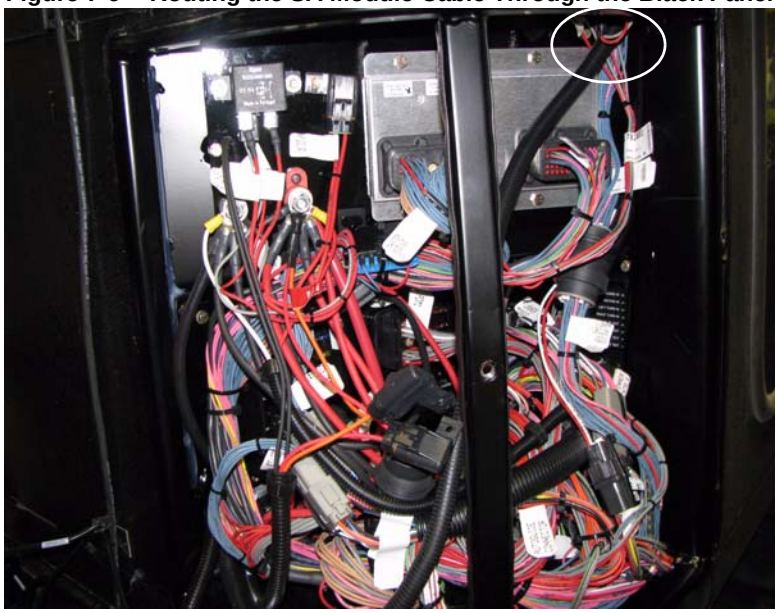
- *Roof Module*
- *Main Cable Harness Connections Inside Cab*
- *SA Module Harness*

Roof Module

1. Route the Main Cable Harness from inside the cab to outside the cab using the existing hole.

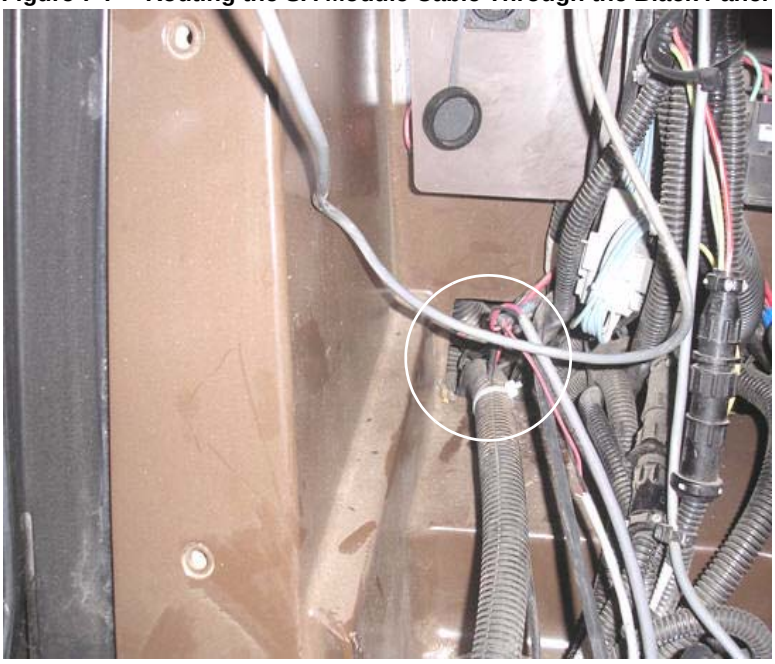
Note: *Figure 7-6* shows the Crenlo cab cable routing location; *Figure 7-7* shows the John Deere cab cable routing location.

Figure 7-6 Routing the SA Module Cable Through the Black Panel (Crenlo Cabs)



Note: The cable pass-through into the cab should be sealed around the cable with a non-permanent caulking material to maintain the cab air seal integrity.

Figure 7-7 Routing the SA Module Cable Through the Black Panel (John Deere Cabs)



2. Attach the cable to the Roof Module. See *Figure 7-8*.

Orient the 12-pin connector so the word “TOP” on the cable connector is pointing upwards (towards the sky). Insert the cable connector into the Roof Module. Push the connector in until it “clicks” and locks in place. To remove, grasp the connector to compress the two side latches and pull away from the Roof Module.

Note: Do not force the connector. If the connector does not engage easily, check for the correct orientation of the connector.

Figure 7-8 Roof Module Main Cable Harness Connection

3. Attach the LAN connector to the Roof Module. See *Figure 7-9*.

Orient the Ethernet cable connector with the connector under the receiver so the contacts on the cable connector are pointing towards the back of the vehicle. (This will usually be towards your right side if you are standing on the left side of the vehicle and looking towards the Roof Module.) Slide the cable connector into the receiver and rotate the plastic bayonet sleeve clockwise to lock the connector. The bayonet sleeve will “click” when it fully engages and locks. To remove the cable, rotate the bayonet sleeve counterclockwise until it “clicks” and pull the connector down or away from the Roof Module.

Note: Do not force the connector. If the connector does not engage easily, check for the correct orientation of the connector.

Figure 7-9 Roof Module Ethernet Connection

Main Cable Harness Connections Inside Cab

Figure 7-10 shows the Main Cable Harness connections used inside the cab. *Table 7-1* shows the functions of the Main Cable Harness cab connectors. Refer to your Display user manual for instructions on connecting the Main Cable Harness connections shown to the correct ports and harnesses on the Display and Display cables.

Figure 7-10 Main Cable Harness Cab Connections

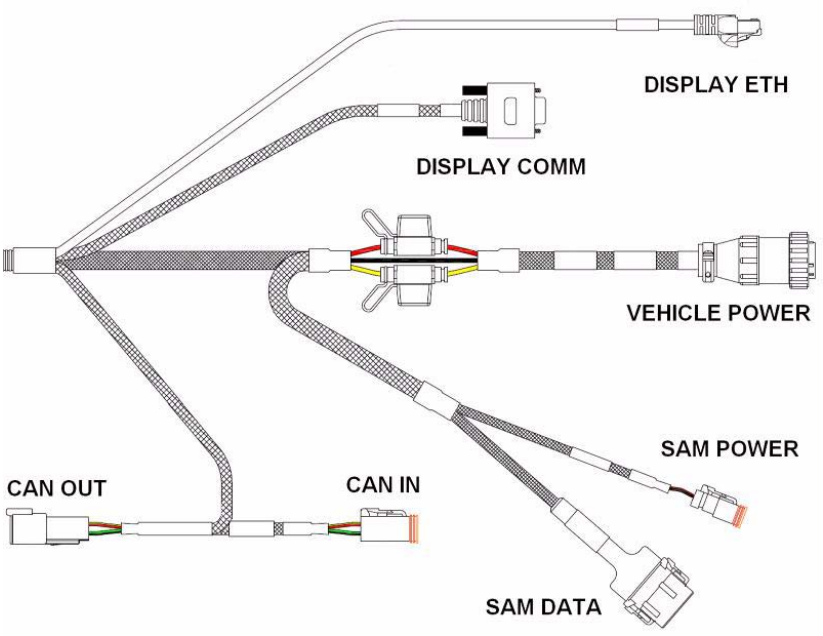


Table 7-1 Cab Main Cable Harness Connector Functions

Main Cable Harness Connector	Connector Function
DISPLAY ETH	Display Ethernet Port (RJ-45)
DISPLAY COMM	Display Communication Port (DB-9)
VEHICLE POWER	12 Volt Power
SAM POWER	Power for SA Module
SAM DATA	Data for SA Module
CAN IN	Not Used for This Installation
CAN OUT	Not Used for This Installation

SA Module Harness

Note: The instructions below detail the procedure for attaching the SA Module Cable Harness in a Crenlo cab. If your cab is a John Deere cab, the instructions are almost the same except the panel you have to unmount is a bit different; the panel itself is also located on the right side of the cab.

1. Identify the gray knob on the right side of the cab. See *Figure 7-11*.

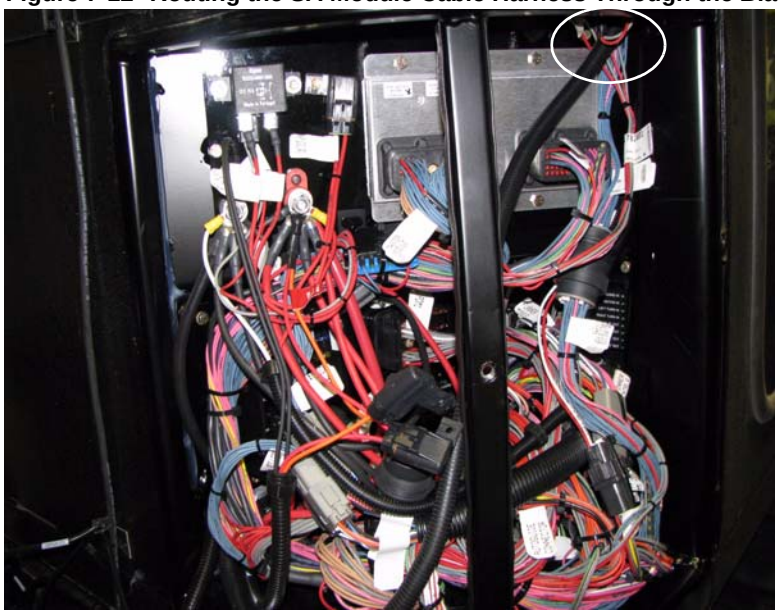
Figure 7-11 Identifying the Gray Knob

2. Unscrew the gray knob and open the black panel.

3. Route the cable inside the cab through the hole as shown in *Figure 7-12*.

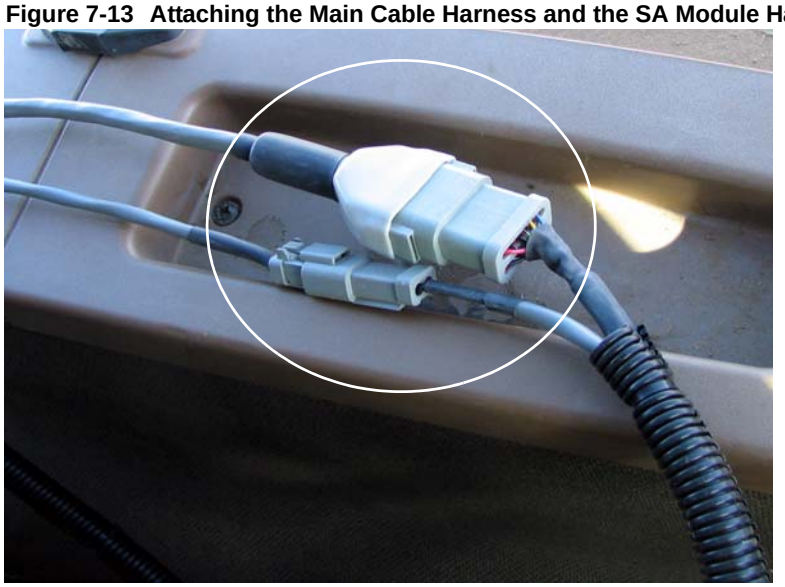
Note: The cable pass-through into the cab should be sealed around the cable with a non-permanent caulking material to maintain the cab air seal integrity.

Figure 7-12 Routing the SA Module Cable Harness Through the Black Panel



4. Connect the 12-pin data and 2-pin power connectors between the Main Cable Harness and the SA Module Harness. See *Figure 7-13*.

Figure 7-13 Attaching the Main Cable Harness and the SA Module Harness



Power Supply Connection

The following sections describe basic instructions for connecting the AutoSteer system to available vehicle power sources:

- *Cab Power Connection*
- *Battery Power Connection*

Note: Refer to your Display user manual before connecting the AutoSteer system to vehicle power.

The AutoSteer Main Cable Harness must be connected to a 3-pin 12V power source. Your Display user manual provides specific instructions for connecting power to the AutoSteer system and specifies the appropriate vehicle power source.

Cab Power Connection

1. Locate the cab console right-side 12V power outlet. See *Figure 7-14*.
2. Use this 12V accessory power connector if the Display user manual specifies connecting to power inside the cab.

Note: This power cable installation is for vehicles in the United States. European installations may require the power cable adapter P/N: 201-0234-01.

Note: *Figure 7-14* shows the Crenlo cab power outlet location; *Figure 7-15* shows the John Deere cab power outlet location.

Figure 7-14 Power Outlet Inside a Crenlo Cab

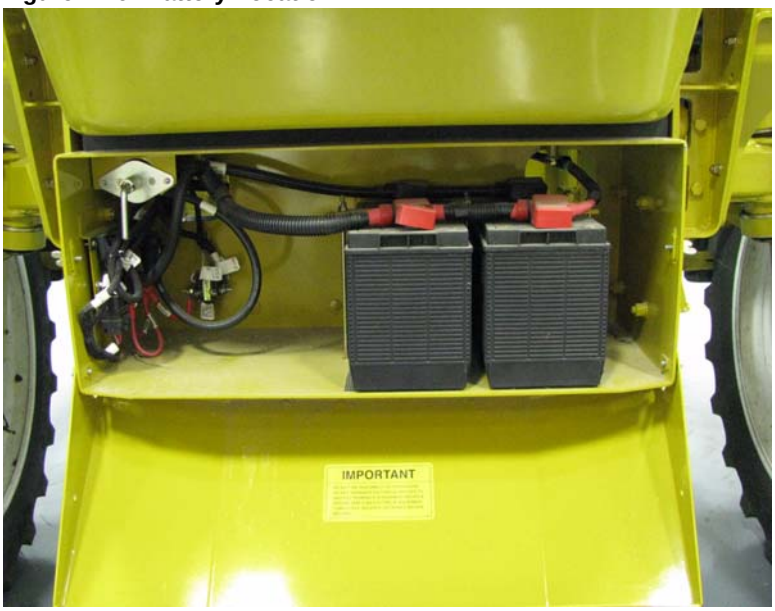
Figure 7-15 Power Outlet Inside a John Deere Cab

Note: A power cable adapter is provided with your kit. When required, use this to connect two systems to a single power outlet.

Battery Power Connection

1. Locate the vehicle battery on the front of the vehicle. See *Figure 7-16*.
2. Connect to the vehicle battery if the Display user manual specifies a direct battery connection.

Figure 7-16 Battery Location



Note: A battery cable is provided with the AutoSteer system when a direct battery connection is required.

Post-Installation Procedures and Information

The **Post-Installation Procedures and Information** chapter provides information in the following sections:

- *Hydraulic Leak Check*
- *Create New Vehicle*
- *Steering Cylinder Phasing*
- *Calibration and Tuning Guidelines*
  - *Transducer Calibration*

Once the entire AutoSteer system, including the Display and display harnesses, have been installed on the vehicle, the procedures and notes provided in this chapter must be followed to complete the installation and prepare the vehicle for full AutoSteer capabilities.

Hydraulic Leak Check

On completion of installing the entire AutoSteer system including the Roof Module and Display, the system needs to be checked for leaks. Follow the procedure below to check for leaks.

1. Clear any bystanders away from the vehicle. If there is a hydraulic leak, they could be injured.
2. Put the vehicle into Park and/or set the parking brake to prevent the vehicle from moving.
3. Turn the vehicle over for a few seconds and if the vehicle starts, immediately shut it down.
4. Walk around the vehicle and check all the hydraulic fittings that were opened. Look for any oil leaks.
5. Once all leaks have been repaired, or if none are found, start the vehicle again and let it run at a low idle.

Note: If an oil leak is noticed during any part of this test, immediately shut down the vehicle and repair the leak.

Note: The front wheels will move when the steering wheel is turned. Make sure the vehicle will not strike anything or anyone before continuing. If necessary, move the vehicle to an open area.

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6. Take the vehicle out of Park and/or remove the parking brake. Turn the steering wheel manually to the right and left stops two or three times to get any air out of the hoses.
7. Confirm the front wheels turn in the correct direction and that the vehicle steers the same as it did before the system was installed.

8. Put the vehicle back into Park and/or reset the parking brake. Shut down the vehicle, walk around it again, and check for any hydraulic leaks.
9. Once the leaks have been repaired, or if none are found, start the vehicle again and let it run at a low idle.
10. Take the vehicle out of Park and/or remove the parking brake. Move the vehicle to an open, flat area and leave the vehicle in Park.
11. Power up the Display and navigate to the **Hydraulic Valve** window from the **Steering Components** window.
12. Command the vehicle to turn Right and then Left a few times. The vehicle should steer in the direction it is commanded. If the vehicle rotates in the wrong direction, the hoses were attached to the wrong ports on the AutoSteer valve and need to be switched.
13. Power down the Display, put the vehicle back into Park and/or reset the parking brake, and shutdown the vehicle.
14. Once again check the vehicle for hydraulic leaks and repair any that are found.

Create New Vehicle

Note: Do not start the vehicle until after the Hydraulic Leak Test has been performed on the vehicle. After the vehicle has been created, shut down the AutoSteer system prior to starting the vehicle.

Once the entire system has been installed, the operator must first create a new vehicle profile. This configures the system so the User display can properly communicate with the various sensors and components on the vehicle. Follow the procedure below to create a new vehicle.

1. Make sure the User display is not powered ON.
2. Start the vehicle and take it to a clear area (such as an open field) where it can be calibrated.
3. Power up the AutoSteer system.
4. Follow the instructions provided in the Display user manual to create a new vehicle.

Steering Cylinder Phasing

The steering cylinders must be phased so the front wheels are correctly aligned before starting AutoSteer calibration. Refer to your vehicle’s owner manual instructions to do so.

Calibration and Tuning Guidelines

Note: For optimal steering performance, the AutoSteer system must be fully calibrated and then tuned.

Transducer Calibration

The transducer calibration procedure on this vehicle is different than other AutoSteer installations because the transducer is measuring a low pressure Load Sense pressure signal. In order to provide good manual kick-out response, you must calibrate the pressure transducer HIGH number to be about 3000 counts above the LOW number.

Confirm that the pressure transducer calibration is correct by testing the manual kick-out feature while driving in AutoSteer mode. AutoSteer should disengage when you turn the steering wheel. If spontaneous kick-out occurs while in AutoSteer mode, recalibrate the pressure transducer and increase the HIGH value slightly. Repeat this procedure until you obtain good manual kick-out without spontaneous kick-out in AutoSteer mode.

Final Hardware Installation Checklist

This **Final Checklist** chapter contains the verifications steps necessary after the installation of the AutoSteer system.

Note: The Final Hardware Installation Checklist is on the back of this page. Tear this page out of your manual and fill in the checklist after the installation. You should keep a copy of this checklist for future reference when servicing the vehicle.

Machine Model: _____ Year: _____ Serial #: _____

Customer Name: _____

Location/Address: _____

AutoSteer Installation Kit Part Number: _____

NOTES

_____

_____

_____

_____

_____

_____

Name of Installer: _____ Date: _____

System Installation Checklist

1. Wheel Angle Sensor installed and all fasteners are tight. (optional) ☐
2. Display Bracket and Display are installed and all fasteners are tight. ☐
3. Roof Rail and Roof Module are installed and all fasteners are tight. ☐
4. SA Module is installed and all fasteners are tight. ☐
5. All cable ends are connected. ☐
6. All cables are secured with cable ties. ☐

Hydraulic Installation Checklist

1. Steering Valve Bracket is installed and all fasteners are tight. ☐
2. Steering Valve is installed and all fasteners are tight. ☐
3. All hose fittings are tight. ☐
4. Check for oil leaks on all hydraulic connections. ☐
5. All hoses are routed and secured with cable ties. ☐
6. Manual steering is normal after the AutoSteer installation. ☐
7. Relief Valve is adjusted. ☐

AutoSteer Performance Checklist

1. Complete AutoSteer system calibration. ☐
2. Complete AutoSteer system tuning. ☐
3. Check total Wheel Angle Sensor counts. (optional) ☐ Value_____
4. Line acquisition is satisfactory. ☐
5. On-line steering is satisfactory. ☐
6. Manual override (kick-out) is working. ☐
7. Steering speed from lock-to-lock is satisfactory. ☐ Value_____Sec.

Note: See the *Post-Installation Procedures and Information* chapter for additional information.